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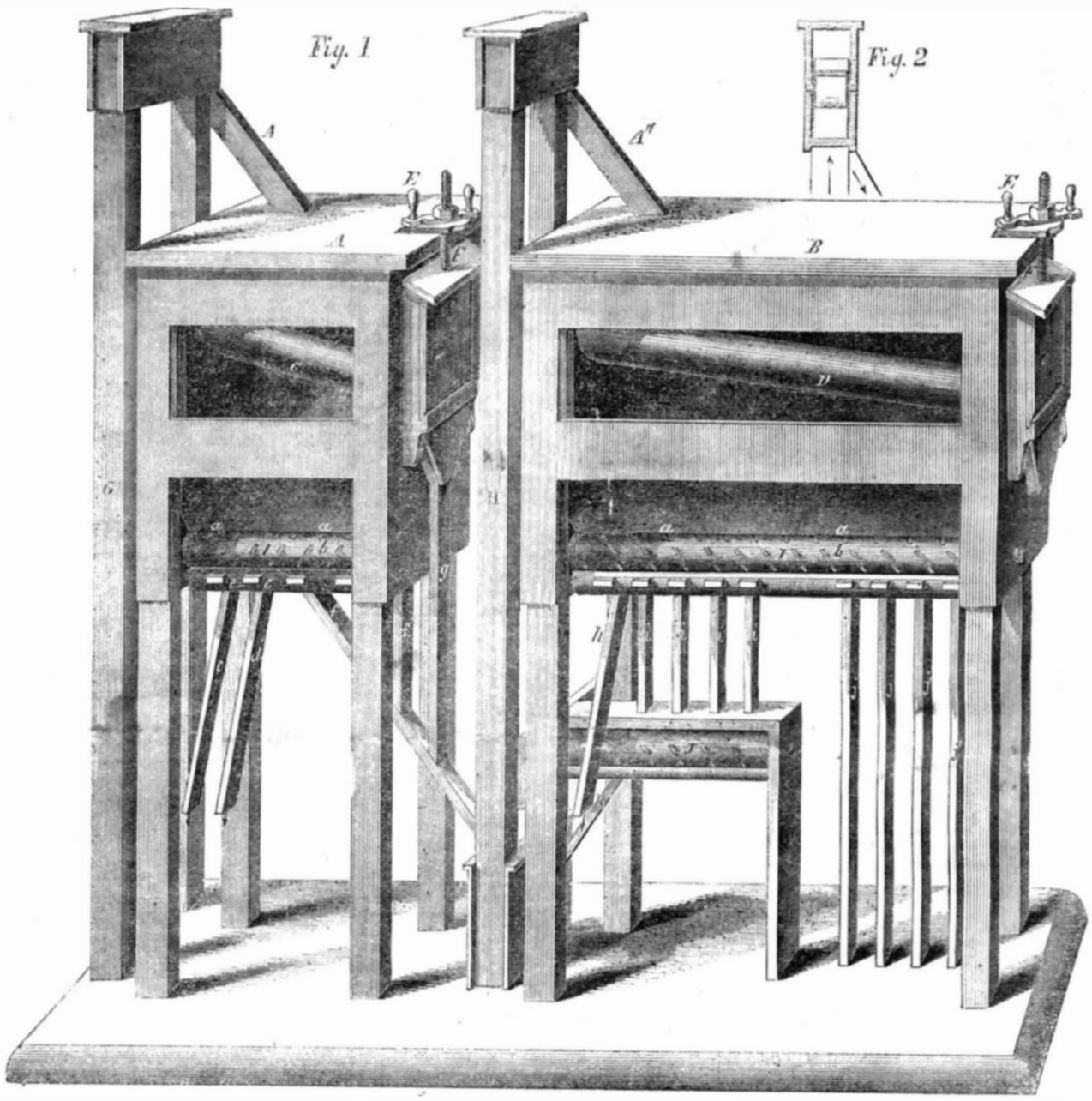
Spots in the Eyes.

Persons in growing old are often troubled with seeing spots, like flies, moving before their eyes, especially in looking at bright objects. These spots have been called by "the profession" *muscae volitantes*. After raising the head suddenly, and fixing the eye upon an object, the *muscae* appear to descend gradually. Dr. Mackenzie, in his elaborate work on the eye, describes these as resembling minute twisted semi-transparent tubes, partially filled with globules, which sometimes *appear* in motion, but really have no motion independent of the ball of the eye, and he considers that the globules are blood passing through the vessels of the retina.

Many persons frequently notice the *muscae volitantes* in their eyes, especially in looking upon snow on which the sun is shining, and nervous persons are very often frightened at beholding them, because they are generally considered a disease, and forerunner of cataract or amourosis. Sir David Brewster gives some comfort to many persons regarding this phenomenon. From late experiments he has come to the conclusion that the spots seen by the eyes have no connection with the diseases mentioned. "This valuable result," he says, "has been deduced from a recondite property of divergent light, which has only been developed in our day." He also asserts that the *muscae volitantes* are harmless, and their general phenomena present themselves to the eyes of every person he has examined—old and young. They may be seen in daylight, he states, by looking at the sky through a pinhole in a piece of brass or card, and at night by looking at a candle through a lens of short focal length. In such observations the luminous field is seen covered with twisted tubes filled with globules in motion. When black spots are seen by the eyes, not changing place, they are not the *muscae volitantes*, but insensible spots in the retina, and are just sources of alarm as symptoms of amourosis.

A few years since, we remember of a paragraph which was quoted very extensively in the newspapers regarding some person in France, who was enabled to see the atoms of which the atmosphere is supposed to be composed, in the form of small transparent globules, by looking through a pinhole in a metal plate in the bright sunshine. About that period, a person came from some distance to our office, and exhibited what he considered a proof of this discovery. It was a long dark paper tube, with a very minute pinhole in its end, by looking through which, these globules could be distinctly seen in motion. They, however, were not the atoms of air, but the *muscae volitantes*, as has since been demonstrated by Sir David Brewster. The *muscae* are generally invisible in ordinary light; it is only by divergent light, such as that which diverges from a small aperture, that they are witnessed.

GEIB'S IMPROVED FLOUR BOLT.



The special object of this improved bolt is to avoid the necessity of rebolting all the meal, good and inferior, in one and the same bolt, and so keep the superior portion free from the substances which darken it and make it speckled. This is done by the employment of two or more bolts in connection with elevators and conveyers, so arranged that the inferior boltings of the first bolt are fed into the second bolt, certain portions of the boltings of which are mixed, and others are allowed to be discharged separately from it. All this will be fully understood by reference to the engraving, which is a perspective view of the machine, with parts of the sides removed to show its construction.

A B are two rectangular boxes on suitable stands, containing bolts, C D, made and operated in the usual manner. The bolt, D, is considerably larger than C, and the depressed ends of both may be adjusted higher or lower, so as to give them a greater or less inclination by having nuts, E, which are on screw rods, F, to which the lower ends of the bearings are connected. G H are two sets of elevators of the common construction—that is, buckets are placed on endless belts and passed over hand pulleys, and placed within trunks or boxes.

Fig. 2 shows a section through the top of one of the elevators, which are placed in front of the bolts, so as to feed the meal at their elevated ends. At the bottom of each box, A B, there is placed longitudinally a conveyer, I, they are simply shafts, *b*, having knives or pins, *a*, placed on them in a spiral direction. To the bottom of the chest, A, and underneath the elevated end of its bolt, C, there are attached two spouts, *c d*, each having a slide, *e*, at its top. Spouts, *f f'*, are also attached to the bottom of the chest below the depressed end of its bolt, and these communicate with the bottom of the elevator, H, and a spout, *g*, receives the "tailings" of bolt, C, and delivers them to the elevator. To the bottom of chest, B, and under the elevated end of its bolt, D, there are spouts, *h*, *i*, *i*, *i*, *i*, and spouts, *j*, *j*, *j''* *j'*, are attached under the depressed end of the bolt. The spouts, *i*, communicate with a box containing a conveyor, J, the lower part of which is connected to the conveyer, H, by means of a spout, K.

The operation of the machine is as follows: The meal from the stones passes into the lower part of elevator, G, from which it is carried into the elevated end of C through an inclined spout, A'. Both bolts being rotated by belts in the usual way. The finest quality of flour passes down into a proper receptacle through the spout, *c*, and the second quality through *d*. The inferior qualities pass down through *f f* into the bottom of H, together with the "tailings" of bolt C. These inferior qualities are fed into the elevated end of D by H through an inclined spout, A''. The superior boltings of D pass through *h* into a proper receptacle, and the second quality passes through the spouts, *i*, into J, and then through K into H again, where it is again carried up to be rebolted, and the third quality or "middlings" passes through *j j*, and the fourth quality or "ship stuff" through *j' j'*. From the above description it will be seen that the meal is not rebolted in C, and in consequence the fine or fancy flour will not be speckled as is now the case, from fine bran passing through the bolt in rebolting, and the flour will be much superior to that now manufactured.

The inventor of this flour bolt is David Geib, of Mifflintown, Pa., who will be happy to furnish any further information. He obtained a patent on Jan. 5, 1858.

A CAREFUL estimate of all the persons of Indian blood indicates that they now number about 5,000,000, in all North America.

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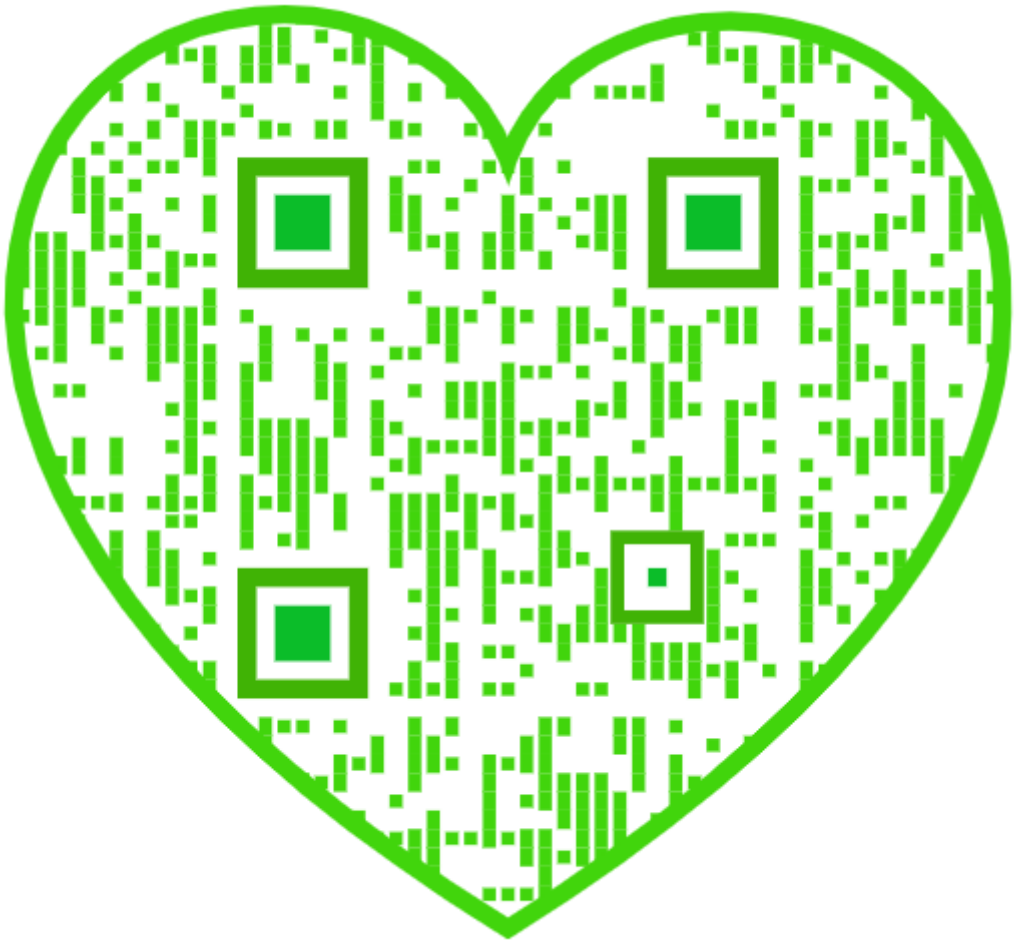

Issued from the United States Patent Office

FOR THE WEEK ENDING MARCH 9, 1858.

[*Reported officially for the Scientific American.*]

SAWING MACHINE—T. J. Alexander, of Westerville, Ohio; I claim, first, The combination with the endless chain, E, and driving pin, f, to the reciprocating feed carriage, of the carriage slide, G, set in independent motion at intervals as described; lever, H, and pawl, I J, of the feeding ratchet, or their equivalents, for actuation of both the longitudinal and cross feeds, essentially as specified.

Secondly, I also claim the gear of the cross feeding ratchet wheel, K, with the feeding roller, L, by frictional contact and support or gear of said roller, through center points or end pins, with lever appliances, or their equivalents, at its end or ends, to admit of the free run of the roller independent of its frictional contact with the feeding ratchet wheel also admitting of the frictional bite of said wheel and roller being established, or broken, with facility, without interfering with the motion of the ratchet and gear therewith of the actuating pawl or pawls, substantially as and for the purposes set forth.

ROTARY STEAM ENGINES—Alfred Arnold, of New York City: I claim, first, The beveled periphery of the wheel, A, whereby the steam expends its force on the faces of the notches while being divided and passed away from the resisting surface of the wheel.

Second, The steam chest, D, with its several perforations as described.

Third, The combination of the valve, F, and steam chest, D, with the wheel of a percussion engine whereby the power of the engine may be decreased without decreasing the velocity and density of the steam applied, substantially as described and for the purpose specified.

METHOD OF BENDING SEVERAL PIECES OF WOOD OF UNEQUAL LENGTHS AT ONCE—H. A. Barnard, of Moline, Ill.: I claim combining the clamp, J, or its equivalent, by which the timber is grasped and held with the strip of metal, I, and the bending form, H, substantially as and for the purpose set forth.

FLOOR PLANE—C. E. Barlow, of Philadelphia, Pa.: I do not claim, broadly, the manner of connecting the handle with the stock.

But I claim the construction of a self-adjusting floor plane, with its handle or handles hinged to the stock, substantially as described for the purposes set forth.

HAND CORN PLANTERS—H. F. Batcheller, of Sterling, Ill.: I do not claim the seed distributing roller, B, for that is an old device and in common use on many kinds of seed drills, nor do I claim the slide, D, for that is also in common use in hand planters.

But I claim the combination of the pressure slide, D, and seed distributing roller, B, arranged as shown and placed relatively with the seed box, A, so as to operate substantially as and for the purpose set forth.

[This invention consists in the employment or use of a slide and seed distributing roller, arranged relatively with a seed box, whereby the slide is made to rotate the seed distributing roller, and also to force the seed into the earth. An adjustable gage board is also employed, attached to the device, so that it may easily be removed when necessary for cleaning the implement.]

MILLS FOR REDUCING SUBSTANCES—Thomas Blanchard, of Boston, Mass.: I do not wish to be understood as claiming broadly the use of two series of circular disks on parallel rotating shafts, with the periphery of one series working in the spaces between the disks of the other series except when arranged so as to have a mode of operation such as I have invented and described.

I claim in the construction of mills for reducing substances the employment of two series of rotating shears constructed substantially as described combined with each other, and with a suitable hopper for the supply of the material to be reduced, and having a mode of operation substantially such as described.

And I also claim in combination with the two series of rotating shears for reducing substances, substantially as described, the two series of eccentric clearers, substantially such as described.

MANUFACTURE OF ARTIFICIAL SKINS—J. H. Brown, of Abbey Mills, Romsey Hants, England. Patented in England Nov. 18, 1853: I claim the manufacture of artificial skins described.

MACHINE FOR MINING COAL, &C.—C. A. Chamberlin, of Allegheny City, Pa.: I claim, first, The combination of chisel-edged cutters and oblique-edged cutters applied to the cutter wheel to operate substantially as set forth.

Second, The construction and mode of fitting together the cutter-wheel and the head, N, in which its axle is supported in the manner substantially as described, whereby the cutter wheel is enabled to cut its way beyond its axis, as explained.

Third, The arrangement of the main frame, the carriage, and the cutter wheel, to operate substantially as set forth.

[We have noticed this invention in another portion of this journal.]

BEDSTEAD FASTENINGS—Wm. Clark, of Weymouth, Ohio: I claim the arrangement of the bolt, D, with the head, D′, and finger, I, and the washer, E, provided with the slot, E′, flange, E², in connection with the jointed rails which are provided with springs, J, and pins, K, for the purpose set forth.

SUGAR AND CIDER MILLS—H. J. Cox, of Warren Co., Ohio: I claim the combination of the several parts of a grooved roller cider mill, and the several parts of a smooth roller sugar mill in manner and form described in the specification, forming a new combination of machinery for the purpose of grinding sugar cane and apples, the same being perfectly adapted to both without alteration.

BILLIARD TABLE TOPS OR BEDS—Chas. Croley, of Cincinnati, Ohio: I claim constructing the bed of billiard tables with the grain of the wood at right angles with the surface of the bed and confining the bed to the frame, a, of the table with the crossbars, c c c, screws, f f f, and blocks of wood, d d d, arranged as represented for the purpose of allowing the bed, B B, to expand and contract, without becoming untrue, as before mentioned, and for other purposes specified in the foregoing specification.

MEAT CUTTER—A. B. Davenport, of Petersham, Mass.: I am aware that vibrating knives have been used with moving trays; these I do not claim, mine it will be seen containing a different feature (its springing or yielding) in connection with its vibration; neither do I claim the use of cams to operate the knife.

But I claim the combination in the manner and for the purposes set forth of the cam wheel, spring knife, and reciprocating tray, when constructed and operating as set forth and described.

MACHINERY FOR MANUFACTURING PLAITED CORD—Charles Feichert, of New York City: I claim, first, The construction of the strand spindles, substantially as described, whereby the operations of twisting together the threads to form the strands and the covering or plaiting of the strands are performed simultaneously and by the same rotary motion, and a uniform twist thus given to the threads of the body and of the plaiting or covering.

Second, The regulators, R R, applied substantially as described between the strand spindles and the laying spindles for the purposes set forth.

Third, The arrangement of the strand spindles, the laying spindle, and the rollers, r r, or other equivalent, for laying the strands, substantially as described for the purpose set forth.

[See a description in another portion of this paper.]

MODE OF TIGHTENING AND SECURING THE KEYS OF THE JOURNAL BOXES OF CONNECTING RODS OR PITMEN—Levi Dederick, of Albany, N. Y.: I claim the application of springs to act upon the tightening keys of the journal boxes of connecting rods and pitmen, substantially as and for the purpose specified.

[Springs are applied to the tightening keys of the journal boxes of connecting rods and pitmen, in such a manner that the said springs will drive up the keys to tighten up the boxes as fast as required by the wear of the boxes and journals, and hold the keys in their places to retain the proper degree of tightness of the boxes.]

SEED PLANTERS—Wm. C. Doss, of Texana, Texas: I claim the cylinder, F, provided with the cups, H, and fingers, G, in combination with the cylinder, J, armed with obliquely set paddles, K, arranged and operated in the manner and for the purpose specified.

MACHINE FOR FITTING WAGON TIRES—E. L. Dorsey, of Johnson county, Ind.: I do not claim the wheel, B, or the measuring of the tire by means of this wheel.

But I claim the arrangement described of the wheels, E E, and D D, with the wheel, B, hand, F, and spring slide, M, substantially in the manner and for the purpose fully set forth.

LUBRICATING THE AXLE BOXES OF CARRIAGE WHEELS—Wm. Diller, of Lancaster, Pa.: I claim the oblique or inclined grooves or oil chambers, B, formed within the axle box, A, substantially as and for the purpose set forth.

[The box has a series of oblique or inclined grooves formed in its inner side extending entirely around the inner surface, and placed at such distances apart that the portion of the arm of the axle around which one groove will pass over as the box rotates, will adjoin or nearly adjoin the portion of the arm around which its adjoining grooves will pass over. These grooves are made of a requisite depth and breadth to form oil chambers for the perfect lubrication of the arm, without diminishing in any appreciable degree the bearing of the box.]

CORN HUSKERS—Joseph and J. L. Fagan, of San Antonia River, Texas: We claim the rotating wheel, C, provided with spurs or projections, a, and with cutters, f, actuated by the cams, F′, or their equivalents, in combination with the stationary and movable concaves, E E″, the whole being arranged to operate substantially as and for the purpose set forth.

[This invention consists in the employment of a rotating wheel provided with cutters and spurs or projections in connection with two concaves—a stationary and vibrating one—the stationary concave having slitting hooks, they being arranged so as to make a very good husker.]

REPEATING FIRE-ARMS—A. C. Faivre, of Meadville, Pa.: I claim, first, The screw valve or cut-off, J, in combination with the lever, i, and cover, 4, constructed as described:

Second, I claim the concave, 7, with the ball chamber, F, and the powder chamber, T, in combination with the lever, H, and ramrod, z, constructed as described.

Third, I claim the cylinder, 6, constructed as described with the charge chamber and ball tube in combination with the box, D, and the concave, 7, all constructed as described, or any other constructions, substantially the same and which will produce the same results.

SPLICE FOR JOINTS OF RAILROAD RAILS—M. Fisher, of Trenton, N. J.: I claim the combination of the sole piece, a, forelocks, f, and bolt or bolts, b, for splicing the ends of rails on railroads, constructed, arranged and employed, substantially in the manner and for the purposes specified.

PIN STICKING MACHINE—T. Fowler, of Waterbury, Conn.: I claim the combination of the lateral feeding motion of the paper with the longitudinal feeding motion of the paper, when the two motions are effected, substantially as described.

Second, I also claim the method of taking the pins from the conductor in combination with the method of inserting them, one at a time, into the crimped paper, when this is effected substantially as described.

MACHINES FOR HULLING RICE—A. M. George, of Nashua, N. H.: I do not claim separately or in themselves considered, the conical rotating head, C, and shell, D, for they have been previously used for similar or analagous purposes.

But I claim the arrangement, as shown and described, of the conical head, C, shell, D, fan, M, and annular blast or wind chamber, K, for the purposes specified.

[This hulling and scouring device is constructed so that the hulls are not only removed from their kernels or grains, but the kernels on the grains are perfectly scoured and winnowed.]

FIFTH WHEEL FOR VEHICLES—H. T. Goodale, of Clinton, Mass.: I claim the arrangement of the reach, H, with the groove, f, to receive a screw, e, in combination with the conical shell or cap, E, and projection, c, connected by bolt, D, substantially as and for the purpose set forth.

[The object of this invention is to connect, by a very simple means, the front axle with the front spring of the vehicle and also with the reach, in such a way as to allow the former to turn freely, both vertically and horizontally, so that said axle may be turned or moved to conform to the inequalities of the surface of the ground without straining or at all affecting the reach, and the axle is also allowed to be turned freely by the team, as usual, for the perfect guidance of the vehicle.]

GRINDING MILLS—R. D. Granger, of Philadelphia, Pa.: Without laying any exclusive claim to the employment of two or more grinding cones, and without confining myself to any particular number of such cones—

I claim, first, So constructing grinding mills having any convenient number of annular, concentric, grinding cones, that each cone shall have its own hopper, communicating with the general hopper, and its own set of feed openings, substantially as set forth and for the purpose specified.

Second, The combination of the bridge-tree, G, as secured to the shell, B′, the burr shaft, F, with its pinion, I, and the shaft, H, with its wheel, J, when each is arranged in relation to the other, substantially as set forth and for the purpose specified.

FIELD FENCE—John H. Jones and Newton W. Smith, of Lebanon, Ohio: We claim the means of uniting the panels by projecting one half of the bars from each end of the panel, and one half of their length into the adjoining panel, between the batteries, and connecting them together with pins, P, or otherwise, substantially the same, which mode of uniting the panels dispenses with the lapping and double battens as before stated.

MACHINES FOR CUTTING AND CRUSHING CORN STALKS—Henry and Amos Hersh, of Lancaster county, Pa.: We claim, first, The peculiar shape of the knives located at top of cylinder, and attached to the arms of the shaft for the purpose of cutting off the ends of corn stalks by a circular sweep and an angular downward cut at the same operation, as described.

Second, We claim the combination of the knives as curved to correspond with the cylinder at top, and its spiral set teeth at the sides for the purpose of cutting and crushing the corn stalk at one operation most effectually and in the simplest manner as described.

STUMP EXTRACTORS—Washington Hall, of Brewer, Me.: I claim the combined arrangement of the simple levers, h h, having their fulcrum in the windlass axle, with the ratchets, g g, actuating and retaining pawls, i i, and j j, axle, e, and framework, a b c d, the whole so constructed and operating as to form a cheap and effective machine for the purpose set forth.

PLOWS—David Hoke, of Byhalia, Miss.: I claim the arrangement of the coulter, D, in combination with the stock, c, and beam, A, substantially in the manner and for the purpose specified.

I also claim the mode of constructing the stock with a long horizontal flanch, a, by which it is not only secured to the beam, but by which the coulter is held back against the foot of the stock, substantially as described.

LOCK—Abraham Hoagland, of Jersey City, N. J.: I do not claim as original any one of the parts of this lock, but I claim the combination of the several parts to form a catch lock, with a separate key hole on each side, having the bolt A, operated by the segments B, and the spring F, constructed and arranged substantially as described.

EXCAVATING POST HOLES—Wm. R. Johnston, of Rock Island, Ill.: I do not confine myself to a driving wheel of the form described, but contemplate using a wheel for that purpose, having a central shaft, and cogs on the outside, I have also contemplated the using of two augurs at once, one at each end of the general framework, and both moved by the same driving wheel.

But I claim the arrangement of the pinion, b, the shaft, c, the gate, G, the wheel, g, the cogged bar, h, carrying the half nut, f, the whole arranged and operating as described, for the purpose described.

ATTACHING THE SPRINGS OF VEHICLES—F. L. Kidder and A. E. Aeby, of Brooklyn, (E. D.,) N. Y.: We claim so arranging and connecting the springs of four-wheeled vehicles, with the body and axles, as that the draft is transmitted from the bolster longitudinally through the springs to their points of connection with the body of the vehicle at each side, and thence in like manner through the hind springs to the hind axle, forming a direct line of draft on each side of the body from the front to the rear axle, thus dispensing with the necessity of the ordinary perch and braces to support the axle, using for this purpose the O G, or such other form of spring as will accomplish the object in the manner substantially as described.

SAFETY APPARATUS FOR STEAM BOILERS—William K. Hall, of West Hoboken, N. J. Patented in England, Nov. 12, 1855: I am aware that Cadwallader Evans, in April, 1839, invented an an arrangement by which the melting of a plug allowed the steam to escape, and caused a weight to fall and open a cock by which water from a reservoir might extinguish the fire. That John P. Bakewell, in December, 1839, patented an apparatus by which the steam only was blown from the boiler on the melting of a plug; and that in May, 1855, A. M. Glover proposed an apparatus by which an over pressure of steam, when the boiler had a full supply of water, would force some of the water into the furnace, and when the water became low, in such a case, would permit the escape of steam, thus occasioning, in various ways, the premature escape of steam, which my apparatus is designed to prevent, and which, in many instances, seems to have been the final link in the chain of circumstances leading to the apprehended disaster.

But I claim the combination of a valve, fusible metal, and intervening elastic substance, and a pipe leading from the lower part of the boiler, as described, by which the water may first be discharged from a boiler when dangerously overheated, and employed, if desired, to extinguish the fire.

MACHINERY FOR POLISHING GLASS, &C.—Alexander Lindsay, of Malone, N. Y.: I do not claim producing a simple rotary motion of grinders or polishers, or the surfaces to be ground or polished, by the friction produced by the rotation of the opposed surface or surfaces.

But I claim the arrangement of the grinders or polishers substantially as specified, whereby they are caused to derive a compound rotary motion such as is specified, by the friction produced upon them by the rotary motion of the surface or surfaces to be ground or polished, or what is equivalent, the reverse arrangement by which the surface or surfaces to be ground or polished are caused to derive similar compound rotary motion by the friction produced by a rotary motion of the grinding or polishing surface.

[This is described on another page.]

SAFETY VALVE—William H. Low, of Albany, N. Y.: I am aware that auxiliary safety valves to be weighted to a given pressure and locked up beyond the interference of the engineer or other party, have been used, and I do not claim them broadly; but I claim first, The combination of the "double beat valve," B, with the seat, A, and weight, F, when arranged in relation to the passages, a, a, and to each other as described and for the purposes set forth.

Second, The combination of the double beat valve, B, with the handle, G, casing, c, pin, g, and slotted hole, g′, as and for the purposes set forth.

COTTON PRESSES—Josephus Loving, of Moscow, Tenn.: I do not claim broadly so operating the follower of the press, that a progressive or variable power is obtained, for various plans have been devised for effecting this purpose.

But I claim the peculiar means employed for thus operating the follower, to wit: the crossed levers, F, G, in combination with the rollers, a, a, b, and e, e, f, attached respectively to the follower bar, E, and straps, c, c, substantially as shown and described.

[This invention relates to an improvement in that class of presses in which a progressive power is obtained, and consists in the peculirr means employed for actuating the follower, whereby a progressive power is not only obtained by a very simple means, but the small amount of friction attending the operating or moging the follower, gradually diminishes as the lever power is increased, the several parts so operating as to render this class of press much more effectual than usual.]

MACHINE FOR PACKING FLOUR—Judson Mattison, of Oswego, N. Y.: I claim as a protection to the sack or barrel to be packed, a stationary or movable cylinder containing a screw or some other packing apparatus, arranged to work within said cylinder and force the flour or other substance to be packed, out of said cylinder, and pack it into the sack or barrel that surrounds it, substantially as described.

I also claim a traversing or yielding platform, so constructed and arranged as to hold the sack or barrel up around the cylinder containing the packer, substantially as described, and yield as the sack or barrel is filled with packed flour or other substance being packed by the machine: and in combination with the traversing platform, I claim one or a series of weights, arranged so as to counterbalance the weight of the material being packed on the platform, so as to pack the flour or other substance uniformly, from the bottom to the top of the sack or barrel.

MODE OF OPERATING BRAKES OF RAILROAD CARS—Melville McGee, of Jackson, Mich.: I claim the compound adjustable link and pullies specified, in combination with the device upon the locomotive for operating the brakes, the whole being constructed, arranged and operated substantially in the manner and for the purposes above described.

CURTAIN FIXTURE—Joseph F. Hall, of Bangor, Me.: I claim the combination of the spring, E, and the pulley, i, substantially as set forth.

MANUFACTURE OF GAS—David C. Knab, of Paris, France. Patented in France, March 30, 1849: I claim the manufacture of gas and of coke, and other secondary products, in furnaces constructed and operated substantially in the manner set forth.

SKIRT SUPPORTERS—N. C. Nelson, of Concord, N. H.: I do not claim a supporter waistband with shoulder straps.

I do not claim the use of hooks or buttons upon a supporter waistband for the purpose of attaching skirts thereto.

But I do claim the projecting out or flaring of the lower edge of the frame of the waistband, or of pieces attached to it, as E, E, E, (making the waistband shaped like the natural waist,) substantially in the manner described above, in order that the skirts may be supported, not by hooking, buttoning, or tieing them to the supporter waistband, but by simply putting the skirt waistbands about the supporter waistband, in the same manner as they are put about the waist when no supporter is used.

SNOW PLOWS—Joseph H. Pawling, of Philadelphia, Pa.: I disclaim the invention of the inclined plane, A, A, the lateral wings, D, D, the movable wing, g, the cutters, C, C, C, simply as such, the scrapers, S, S, S, S, simply as such, and every part and arrangement not after specifically claimed by me.

But I claim, first, The arrangement set forth in the said specification or any other substantially the same, by which the cutters, C, C, C, are made to revolve upon their axes, and by which the movement of the truck in following the direction and curves of the rails is communicated to the cutters, and brings their edges and causes them to act always in the direction in which the plow is moving.

Second, The arrangement of the scrapers as before specified, or any other substantially the same, by which they can be elevated and depressed at pleasure, so as to be kept clear of the rails when the train is backing, and thus prevented from catching in the joints of the rails, and can be pressed against the rails when the train is moving forward at the will of the operator.

ATTACHING METALLIC LETTER BOXES TO LAMP POSTS—Albert Potts, of Philadelphia, Pa.: I claim the combination of the letter boxes and lamp posts, by making the letter boxes (metallic) with a perforation or socket, through the center or side thereof, as shown at E, and F, so as to slide over and embrace the shaft of the ordinary cast iron lamp post, as above described and for the purposes mentioned.

SEED PLANTERS—Joseph Redhead, of Woodville, Miss.: I claim first, The seed distributor, G, hung upon hinged arms, and agitated as described, for the purpose of sifting the seeds through the opening or openings in its bottom, as set forth.

Second, I claim a supply seed box, rocking or oscillating on its supporters, as an auxiliary in furnishing the distributor with seeds, without so overcharging said distributor as to cause the seed to choke or clog therein, substantially as described.

APPARATUS FOR CONTAINING AND IGNITING CIGAR LIGHTING CINDERS—Henrich Reimann, of Hartford, Conn.: I claim the combination of the conveyor, c, and ring, b, with the toothed ring, a, constructed and operated substantially in the manner and for the purpose set forth.

ROTARY PUMPS—William Pierce, of New Orleans, La.: I am aware that separate blades designed to be thrown out by centrifugal force, and having shoulders to arrest their movement, have been used in connection with an eccentric inner surface. This I do not claim, as such pumps require rapid rotation to render them operative. I also disclaim the connecting of blades and arresting their motion by shoulders of the opposite blade when separately considered.

But I claim the united blades whose amplitude of motion is limited by shoulders of the opposite blades, as described, in combination with the projection, m, in filling the space between rim, d, and center piece, a, as specified.

SPRING SEATS OF CHAIRS, SOFAS, &C.—Charles Robinson, of Cambridgeport, Mass.: I claim the hinged supporting blocks, B B, and their projecting arms, C C, connected by a band or bands, D, and operating substantially as and for the purpose specified.

ENAMELING LEATHER—John Rose, of Newark, N. J.: I am aware that carbonate of ammonia and sea-salt have been mixed with india rubber, but in a manner and with results widely different from my invention; such use of these substances I do not claim.

Neither do I claim the invention of Canada balsam varnish.

But I claim the process of enameling leather, the whole operation being substantially as described, and for the purposes specified and set forth.

CULTIVATORS—D. B., Seymour, and Lunian Rogers, of Pittsburgh, Pa.: We claim the combination of teeth, braces, standards, spring clamp and gage-irons with the frame of a cultivator, the whole being constructed and arranged in the manner and for the purposes set forth.

CLOTHING FOR CARDING CYLINDERS—C. G. Sargent and F. A. Calvert, of Lowell, Mass.: We are aware that clothing for carding cylinders and burring cylinders has been made by punching up teeth from short strips of sheet metal, which were secured longitudinally to the cylinder, and we therefore lay claim to no such invention.

But we claim the described method of making clothing for burring and carding cylinders, the teeth being formed upon flattened wire and bent at right angles to the plane of the strip of metal which sustains them, for the purpose set forth.

MODE OF PRODUCING VERTICAL AND HORIZONTAL RECIPROCATING MOTION—Matthias Steigers, of St. Louis, Mo.: I claim so arranging and combining a series of eccentrics, or their equivalents, as to communicate to machinery a reciprocating motion in a vertical and horizontal direction at one and the same time, substantially as set forth.

GRINDING MILLS—Gelston Sanford, of Poughkeepsie, N. Y.: The particular improvement which constitutes my invention, and which I claim is, giving the edges of the plates, D and E, having a longitudinal and lateral motion with reference to each other, the notch form described, or its equivalent, by which the breaking of the coarser particles, and their introduction between the plates is insured, substantially as set forth.

WINDOW-FASTENER—E. S. Scripture, of New Haven, Conn.: I am aware that bolts with spiral grooves formed in them have been used before for various purposes; I therefore do not claim such.

But I claim the vibrating tracer, B b, or, in other words, small section of a screw nut, allowed to be vibratory in its operation, in combination with the elastic pillow block, C, the regulating block, D, the bolt, E, and the catch stud, G, with their flanges and inclined planes, all being secured in a two-part tube, and all being arranged substantially in the manner and for the purposes set forth.

MATHEMATICAL DIVIDERS—Anton Schaefer, of New York City: I claim the application and use of a parallelogram to dividers, in the manner and for the purpose specified.

HARVESTERS—Henry C. Smith, of Cleveland, Ohio: I do not claim any of the devices named and described as new, in themselves considered, or detached from each other. But what distinguishes my improvement from all others relates to the manner of elevating and depressing the cutter-bar, by means set forth, and also in giving any desired pitch to the fingers, or keeping them in a horizontal position, by means of changing the relative position of the neap, in reference to the frame, D, and drag bars, E E, and at the same time changing the point of draft, as the nature of the case may require.

I claim the manner described of raising and lowering the cutter-bar, by the combined action of the levers, H

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I J, the flexible rod or cord, P P′. levers, R R′, and wheel, S: this I claim when constructed and relatively arranged and operating as described, and also when used in connection with the drag bars, E E, articulating upon the axle, C, as set forth, for the purpose specified.

HOT WATER RADIATORS—Thomas T. Tasker, of Philadelphia, Pa.: I am aware that sections of tubes, with and without flange and shoulder joints, have been secured together by through bolts, and I lay no claim to this mode of securing parts of a tube together.

But I claim the mode of securing together the several divisions or systems of radiator tubes, as set forth, the same consisting in the employment of the four terminal sections, E, to each division, the whole being held together by the through bolts, H, as set forth, thereby affording great facility in setting up the radiators, and in taking them apart.

IRON PAVEMENTS—Abijah B. Tewksbury, of East Boston, Mass.: I do not claim an iron hexagonal paving block formed with legs or lugs, extending downward from the several corners of its cap, to be united or fixed to other blocks of like character, by means of iron slips, or bands, such being described in the specification of No. 15,776 of United States patents.

Nor do I claim a pavement block made of metal, and formed of a series of arches alternating in position, and connected to ridge or string-pieces, and having interstices between the arches, the same being shown in No. 15,479 of United States patents.

Nor do I claim a pavement block made of a hollow cubical box, having an arched or ribbed cup, and formed with round holes through its vertical sides, as my invention, or improved block, as a whole, differs essentially from such.

In the first place, it had but two prongs extended down from the ends of its cap, and such cap is arched in two directions, viz., lengthwise, as well as widthwise. My block is of an oblong shape, and each prong is made wedge-shaped, in order that when the block may be driven downwards, the wedge-shaped prong will enter the soil, and consolidate the earth which may enter between the two prongs. Furthermore, the concave cap or cup-shaped arch also condenses and consolidates the earth, so as to steady and support the pavement block in lateral, as well as in longitudinal directions.

I claim the improved cast iron pavement block as made with an arched cap and two wedge-shaped prongs, arranged substantially as described.

CONSTRUCTING FRAMING OF BRIDGES, &c.—Wm. McKibbin, of San Francisco, Cal.: I claim the combination of the slotted lugs, a, a, on the ends of the bars, the slotted plates, c and d, and the wedges or keys, c, e, substantially as described, for the purpose set forth.

[This invention consists in a novel and very simple method of clamping and securing together the ends of metal bars, and of uniting plates with the said bars, by which great strength is obtained. The invention is applicable in almost all cases where it is required to connect the ends of iron bars, whether or not it is required to combine plates with the said bars.]

LIFE-PRESERVER RAFT OF BUOYANT MATTRESSES—W. Urquhart, of New York City: I am aware that it is old to form a raft by strapping together a series of mattresses, which are arranged in the same horizontal plane, the straps being attached to the side edges and end of each mattress, and the connection finally formed in such a manner that unclosed joints between the different mattresses exist for the water to dash up through and flood the raft; therefore I do not claim a raft thus formed.

But I claim providing the mattresses of a ship with straps and buckles on their upper and under surfaces, and with loops round their edges in the peculiar manner shown, whereby, in case of emergency, a series of mattresses can be buckled together, and a life-preserving raft formed, by placing several layers or tiers of the mattresses thus buckled together on top of one another, in a manner to form angular break joints, and said layers or tiers thus arranged readily and conveniently strapped together, in such a manner that it will be impossible for the ties to separate or change their position longitudinally or laterally, as set forth.

VALVE FOR STEAM ENGINES—Isaac Van Doren, of Somerville, N. J.: I claim a valve constructed substantially as described, having the steam-chest in its center, but such steam-chest, so constructed as described, that the steam shall not press against the valve, and also having the exhaust chamber between its outer and inner shells, the whole arranged substantially as and for the purposes set forth.

BENCH HOOK—Edwin B. White, of Nashua, N. H.: I do not claim the shell or case, nor the hook, C, provided with the shank, D, which fits within the shell, A, for these parts have been previously used.

But I claim securing the hook, C, at the desired hight by means of the lever, E, attached to the shell in case, A, and operated or adjusted by the screw, F, or its equivalent, so that the shank, D, of the hook will be pressed against, both at its upper and lower end, and thereby firmly secured within the shell or case, as described.

[This invention consists in the novel means employed for holding the hook in its case or shell, whereby the hook may be readily adjusted, and firmly secured at the desired hight above its bed-piece or plate, so as to effectually resist the pressure of the stuff which is placed against it, as usual, while being planed, or otherwise operated upon.]

CARPET-STRETCHER—Joseph Warner, of New Britain, Conn.: I claim the lever, A, of any proper form or shape, provided at one end with teeth, d, and pivoted to a plate, B, having spurs, e, attached, substantially as and for the purpose set forth.

[This is a lever, having teeth pivoted to a plate provided with spurs, the parts being arranged so that the implement may be readily secured to the floor, and connected to the edge of the carpet in such a way that, as the latter is tacked to the floor, it may be stretched with the greatest facility. This stretcher is, in every way, convenient for operation.]

TRENCHING PLOW—William Wise, of Washington, D. C.: I claim the combination of the auxiliary share with the plow, substantially as described.

I also claim the combination of the guide-bar with the plow, substantially as described.

COTTON GINS—Francis L. Wilkinson, of Adam's Run, S. C.: I am aware that the plate, E, has been previously used for the purpose stated, and stripping brushes have also been used; I therefore do not claim separately the plate, E.

I am also aware that grooved rollers have been used in cotton gins, and therefore I do not claim them as my invention.

Nor do I claim, separately, and irrespective of their relative position with the rollers, D B, the brushes, v w, on the bars, H I.

But I claim the arrangement shown and described of the spirally grooved rollers, B D, one or both, stripping brushes, v w, and plate, E, for the purposes set forth.

[One or both of the rollers of this cotton gin are grooved spirally, like a screw, for the purpose of readily detaching the seed from the cotton; and there is also used in connection with the grooved rollers, stripping brushes, and a guard plate, whereby the usual slow process of ginning cotton by means of rollers is much expedited, is as effectually performed.]

RAILROAD CAR BRAKES—Stephen M. Whipple, of North Adams, Mass.: I claim the combination of levers, pulleys and chains, operated and arranged substantially as described, by which a brakeman on the rear end of the last car of the train is enabled to brake the train.

MACHINES FOR PICKING FIBROUS MATERIALS—Oliver Woodworth, Jr., and J. D. Page, of East Hartford, Conn.: We claim the combination of two or more conical cylinders, having teeth placed spirally around them at proper intervals, and within a suitable case, having teeth arranged in such manner as to allow the teeth in the cylinders to pass between them, for the purpose described, and in the manner substantially as set forth.

We wish it understood that we do not confine ourselves to the precise dimensions given, but vary according to the kind of stock used and quantity required.

STEAM BOILERS—Joseph Wood and H. N. Winans, of Jersey City, N. J.: We claim the interposition of the diaphragm reflector, A, between the flues and the exhaust for the purpose of protecting the exhaust from the draft, and for reflecting the heat back to the head, the whole constructed and arranged substantially as described.

CONSTRUCTION OF MILITARY DRUMS—Charles M. Zimmermann, of Philadelphia, Pa.: I do not claim tightening the ends of military drums by a rope passing through holes made in the hoops, and over the same, as this is in common use.

But I claim arranging and adapting a series of pulleys, b b b b, to the sides of drum hoops, for the purpose set forth.

CORN-SHELLERS—Daniel G. Greene, (assignor to himself and George H. Greene,) of North Bridgewater, Mass.: I am aware that a double tapering cylinder for shelling corn was patented by James Ross, April 12, 1833, and therefore I make no claim to said device.

But I claim the arrangement of the single tapering roll, b, concave shells, d d′, slots, f f′, spring, g h, and spout, i, as shown and described, whereby the ear of corn is always kept in horizontal position, and the cob is prevented from being forced diagonally under the roll, and is thus saved from being crushed or broken, together with other advantages, all as set forth.

METHOD OF GENERATING STEAM IN COMBINATION WITH ATMOSPHERIC AIR AS A MOTIVE POWER—James Black, (assignor to Scott, Todd & Co.,) of Philadelphia, Pa.: I do not wish to be understood as making claim, broadly, to generating a vapor or gas from atmospheric air holding moisture in suspense, as this will not produce the result contemplated by me.

But I claim generating a vapor or gas for mechanical purposes by injecting into a suitable heated vessel or generator a mixture of atmospheric air and water, in about the proportions specified, and substantially in the manner and for the purpose specified.

DRESS OF STONES FOR HULLING MILLS—David Collins, (assignor to himself and W. L. Hanford,) of Jersey City, N. J.: I do not claim dressing hulling stones with radial or curved furrows.

But I claim the runner stone, dressed with the radial polygonal furrows, 3 and 4, as specified, when combined with the bed-stone having radial furrows, 1 1, and straight furrows, 2 2, or their equivalents, substantially as and for the purposes specified.

ATTACHING TOOLS TO HANDLES—John Henn, of New Britain, Conn., (assignor to himself, Anton Dane, and Leopold Lankan, of Hartford, Conn.: I claim the arrangement and construction of the plate, w, with projection, D, acting against a spring in the back of a handle, in such a manner that when opened it will relieve said spring to allow a knife or tool to be attached to the upper end of said handle, and when closed, force the spring against the tool, so as to hold the same perfectly steady in the handle, substantially as described.

DEVICE FOR PENTAGRAPHIC ENGRAVING MACHINES—John Hope, (assignor to himself and Thomas Hope,) of Providence, R. I.: I claim combining with the main tracer of a pentagraphic engraving machine, a grooved tablet, A, or its equivalent, and an arm, D, and secondary tracer or guide, E, to run or work in the grooves of the tablet, and to govern the direction of the movements of the main tracer in producing the grounded lines of the engraved figures, as specified.

I also claim combining with the tracer, B, the rest, G, so as to operate therewith, as specified.

MATCH MACHINE—Samuel Miller, of Hammond, N. Y., and William Gates, Jr., (assignors to William Gates, Jr.,) of Frankfort, N. Y.: We do not claim the endless chain clamps, C, nor the cutting tool, O, for they have been previously used as stated.

But we claim operating or moving the chain of clamps C, intermittingly, retaining it during the proper dwells, and opening the clamps during said dwells, by means of the cams, I I J J, constructed and arranged substantially as described.

We further claim the guide, S, fitted in the gate, M, and used in combination with the grooved bar, R, for the purpose of guiding the match sticks, or causing them to be properly presented to the clamps.

We also claim the bar, R, with or without the guide, S, when said bar, R, is used in connection with the cutting tool, O, for the purpose of retaining the bolt in proper position as the cutting tool ascends.

[A notice of this will be found on another page.]

WASHING MACHINE—Henry Lawrence, (assignor to himself and J. M. Connel,) of Newark, Ohio: I do not claim oscillating boxes for washing machines, broadly considered.

But I claim the combination as described of the stationary clothes-holder, f, with the oscillating box, B, and flexible rubbing system connected therewith, and made to pass over the said frame, f, substantially as set forth.

RAISING DOUGH—James Perry and Elisha Fitzgerald, (assignors to James Perry, Daniel Fitzgerald, and Horatio Bogart,) of New York City: We claim the process of preparing dough or paste for making bread, cakes, or other farinaceous articles of food, by mixing the materials with gas, under pressure, in a closed vessel, substantially as described, as a means of leavening or raising the same, as set forth.

We also claim discharging the dough, as aforesaid, from the vessel, by the gaseous pressure, as it is required, substantially as and for the purpose specified.

MACHINE FOR PRICKING AND CUTTING HEELS OF BOOTS AND SHOES—Edward S. Snell, (assignor to himself and Francis B. Washburn,) of North Bridgewater, Mass.: I claim the arrangement of devices described, for pricking the holes in boot and shoe heels, the same consisting of the block, g, furnished with a series of awls, h, the plate, k, and a pattern or bed piece, n, upon which the heel is placed, the whole operated substantially as set forth.

In connection with the above, I also claim the cutting apparatus, consisting of a knife, so arranged upon a sliding carriage as to keep up to the pattern, and furnished with a wheel that travels on the pattern in front of the knife, to adapt the knife to short curves in heels, whereby a heel is formed and pricked accurately, as set forth.

SEWING MACHINES—Chas. Raymond, (assignor to Willford H. Nettleton,) of Bristol, Conn.: I wish it to be understood that I do not claim fixed and moving looping instruments, over both of which the thread is drawn to spread the loop for the needle to pass through, as this has before been used; but I am not aware of any previous device, in which the loop has been taken and directed to a double inclined spreading plate, on the sides of which the loop is spread, by the drawing up of the needle thread, thereby insuring the proper entrance of the needle into said loop in its next descent, and using but a very short loop close up to the bed supporting the material being sewed, at the same time the instrument taking the loop from the needle performs no duty in spreading the loop, but simply directs it to the stationary double inclined spreader, as specified: therefore—

I claim first, The combination of the thread guide, 3′, clamping surface, 3, and the eye, 2, on the upper end of the needle bar, when said thread guide is fitted to move with the needle bar, and regulated by the stop, h, or its equivalent, so as to measure off the amount of thread for each stitch, substantially as specified.

Second, I claim a stationary double inclined spreading plate, n, over the sides of which the loop is drawn and spread when combined with a looping point, to direct the loop of needle thread to said spreading plate, as it draws up, as specified.

INK STANDS—Lucien E. Hicks, of Boston, Mass., (assignor to David C. Field, of Brooklyn, N. Y.): I claim the employment of the bottom, b, of a flexible inkstand, constructed substantially in the manner set forth, for the purpose of serving as a valve in its use with the tube, d, operating in the manner and for the purposes set forth in the foregoing specification.

RE-ISSUES.

GAS TUBE JOINT—Chas. Monson, of New Haven, Conn. Patented Jan. 19, 1858: I do not claim the invention of the well known universal joint composed of parts not tubular, or having no passage through it by which a fluid can pass from one part to the other connected by such joint. Nor do I claim the well known "ball and socket joint," so formed and applied to or made to connect two tubes, that there may be a passage through it leading from one to the other of such tubes.

But I claim a conduit universal joint, made substantially as described, viz: with the armed branches, g, h, and their connection cross jointed together and provided with one or more passages, so arranged in them as to open a communication from one leading tube, a, to the other, b, with which such conduit joint may be connected.

And I also claim the combination of the relief ring, c, or its equivalent, with the armed branches, and the connection cross, the same being arranged therewith substantially in the manner and for the purpose as specified.

ADDITIONAL IMPROVEMENTS.

STEAM PLOWS—Peirce Klingle, of Washington County, D. C. Patented Feb. 23, 1858: I claim the placing of clearers, S S, in connection with the off bearing wheel, B, of my steam plow, in such a manner that the one will fill back the furrow that the other has opened, they being arranged, constructed, and operated substantially in the manner and for the purpose described and set forth.

CUTTING FLOUR MILLS—Jonathan Burdge, of Cincinnati, Ohio. Patented June 10, 1856: I claim the doubly conical concavity in and cutting ridges on the face of the cutter head, arranged and acting as described, in combination with the concavity and ridges of the counter plate for the purpose specified.

I also claim extending the ridges, B B, inward beneath the feeding aperture of the counter plate, in combination with the inner conical concavity of the cutter head, and with the counter plate, substantially as and for the purpose set forth.

DESIGNS.

CARRIAGE HUB SAND BANDS—James Ives, of Mount Carmel, Conn.

Coffee, Tea, and Cocoa.

MESSRS. EDITORS—I have, on a former occasion, made some suggestions upon coffee-making; and in pursuing the same subject, to show how the use of this beverage has increased in 150 years, I may state that in that time the production of coffee has increased from 10,000,000 pounds annually, to 500,000,000 pounds, or fifty times the original amount. In Europe alone, during the last thirty-six years, the consumption has increased from 150,000,000, to 250,000,000 pounds. It is a curious historical fact, that in Arabia, where the use of roasted coffee originated, it was used to keep awake the worshipers in the temples; and an immense number of coffee-drinkers were always to be found in the coffee-houses, especially in Constantinople (where the first coffee-house was established in 1554); so much so, that the churches were emptied, and therefore a tax was levied on coffee-drinkers by the Sultan. The first coffee-house was opened in London in 1652, by a Greek named Paqua, and shortly afterwards another one was opened in Paris.

The coffee bean consists of a homogeneous tissue of cells, and contains from 15 to 20 per cent of a substance called *protein*, which is also found in the fibrin of the human body, and there is of the caffeate of coffee and tannin combined with alkali and caffeine, about 5 per cent, and 13 per cent of fat, sugar, and gum; the rest is lignin, albumen, and water. The process of roasting changes the tannic and coffee acids into an agreeable aroma, and according to the chemist Payen, most of the caffeine is formed at the same time. As the aroma exists in such small quantities, it is driven off at too high a temperature, and the fat and sugar is also destroyed, it will be seen that much of the flavor is due to the roasting, which yet requires some study to determine the exact temperature at which it should be performed; this much, however, is *known*, that when the heat is about 200°, much attention should be paid to the color, for *somewhere* about this is the proper temperature. Coffee may be improved by washing in cold water and being properly dried before roasting. I have previously explained the best method of performing this operation.

By the aid of chemistry it has been discovered that there is the greatest similarity between the beverages used as stimulants, and obtained from different plants in all parts of the world. For example, in 1820, the German chemist Runge, discovered the *caffein* of coffee, and a few years after, Oudry, the French chemist, discovered the *thein* of tea—both crystalline bitter substances, containing a great quantity of carbon and hydrogen, and but little nitrogen or oxygen. Mulder, a German, first demonstrated their similarity. The cocoa bean was next investigated, and its essence discovered, and called *theobromin*, or "nectar for the gods."

Science, after showing that the principal beverages of the civilized world are alike, did not stop here, for the Bavarian naturalist Martius, found that the fruits of a plant in South America, known there as *guarana*, contains also a substance like caffein, when roasted, and infusions made, as is done by the natives of the country where it grows, and it produces the same effect as coffee and tea. The same is also true of *maté*, or Paraguay tea, and of the leaves of the *camini*, also used there. If we compare particularly the roasted leaves of tea with the roasted beans of coffee, we find the difference consists in tea possessing more etheric or volatile oil, which is replaced in coffee by an empyreumatic oil; there is no albumen in either infusion.

Used to excess, coffee increases the pulsation, produces congestion of the brain, and a consequent excitement of the whole nervous system; the constant mutations of substances in the body is retarded, and less urea, chloride of sodium, and phosphates are found in the secretions, all of which is due to the empyreumatic oils. Both tea and coffee diminish the appetite, by retarding the processes of digestion; yet at the same time they improve the effect of the food, by lengthening the time of its change into substances necessary for assimilation with the body. The same remarks apply equally to theobromin, only that it is much richer in oils and fats. In Turkey, the sediments of coffee are used as food; on the shores of South America the leaves of tea are eaten, and also by some tribes in Asiatic South Russia, and in some parts of China. In this case it is the nitrogenous albumen which affords the nutriment.

L. R. BREIS.ACH.

Gold Washes.

Gold will not dissolve in muriatic acid alone, although it will be attacked by chlorine. To dissolve it in muriatic acid, therefore, a substance must be added to liberate the chlorine. Peroxyd of manganese does this, and the gold dissolved in such a solution is a sub-chloride. The most useful and important vehicle for dissolving gold is *aqua regia*, (royal water), composed of two parts of hydrochloric (muriatic) acid, and one part of nitric (aqua-fortis). Gold is dissolved readily in this liquid; the nitrous gas escapes in dense yellow fumes while the gold is being eaten up, or dissolved, and the chlorine is set free, and unites with the gold, forming the per-chloride of the metal. The per-chloride of gold dissolves in alcohol and ether, in which condition it is employed as a gold wash for steel instruments. By dipping a polished steel instrument into an ethereal solution of gold, on the evaporation of the ether, the metal is found in a pure state adhering in a fine thin coat; delicate cutting instruments are gilt in this manner.

Lackers are sometimes called gold washes, but there is not a particle of gold in them. They are made of lac varnish, colored yellow with turmeric, or gamboge. Applied to polished metal or wood, they resemble bright brass more than gold. They are made by dissolving *lac* in alcohol—about half a pound to the gallon of spirits, adding half a pound of turmeric and one ounce of gamboge, then straining the mixture, after it is about a day old, through a clean piece of cotton cloth. It is then ready for use, to be put on with a brush, or the article to be lacquered dipped into it.

Patent Law Reform.

We publish on another page a bill recently introduced into the Senate by Senator Evans, of South Carolina, to amend the defects in the existing patent laws. We have not the necessary space to give it attention this week, but we will endeavor to do so in our next number.

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New Inventions.

Mining Machine.

C. A. Chamberlin, of Alleghany City, Pa., has invented a new machine to facilitate the mining of coal. It is principally intended for "undermining" and "side-cutting" seams of coal, but it is also applicable in other mining or tunneling operations. It consists chiefly of a cutter wheel, furnished with an arrangement of cutters, to cut in a direction perpendicular to its axis, arranged in a carriage, which is fitted to travel upon a stationary frame, and a feed screw, or an equivalent device, for moving the said carriage and cutter wheel in a direction perpendicular to the axis of the cutter wheel, for the purpose of moving the wheel forward as it cuts into the coal or other substance. The machine cuts a groove or narrow cavity directly into the walls of a mine, parallel, or nearly so, with the floor or walls, and as close as desirable, in such a manner as to admit of large masses being removed at once by wedges or blasting; thus saving the miners stooping in such unnatural positions as they now do, to pick away the floor, and saving much time. This valuable invention was patented this week in this country, and on January 9, 1858, in England.

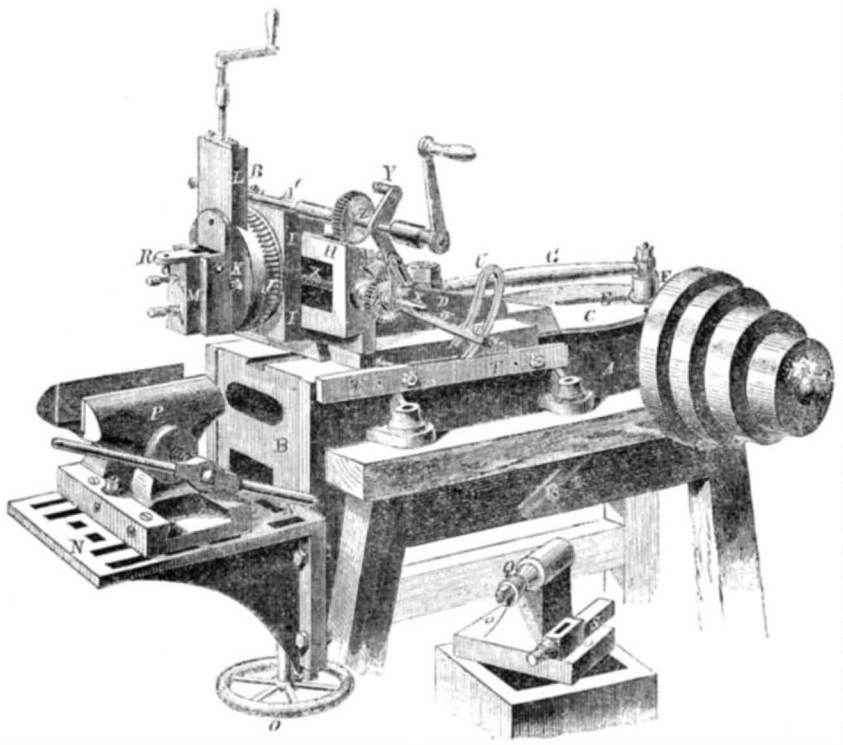
Improved Planing and Slotting Machine.

Messrs. Barton & Son, tool-makers, of Derby, England, have sent us a communication in which they give us the following particulars of their new machine, and to render them thoroughly intelligible to our readers, we have added the accompanying engraving:

The extended substitution of machinery in place of manual labor, and the consequent accurateness and rapidity of execution requisite in the manufacture of machinery, have led to the production of many ingenious mechanical tools, and foremost amongst them stands the shaping machine—one of the most valuable aids to the engineer and machinist. Its peculiar object is the production of those parts most difficult of execution by hand labor, and, considered financially, its value is very great. Any additional improvement in this most valuable tool must therefore be received with pleasure by mechanical men.

The subject of the accompanying illustrations, by Messrs. Barton & Son, is of this character, combining great simplicity with readiness of application to various classes of work. The design of it is to combine a planing, shaping, and slotting machine. Fig. 1 is a perspective view. The bed, A, and the vertical slide, B, are one casting. At the end of the bed, A, a circular recess is bored to receive an inverted bevel-wheel, C, which is driven by a pinion keyed on the end of the cone pulley shaft, D′, carried by a long bearing cast on the side of the bed, A, so that the main slide, D, can pass over it. Across the top of the bevel-wheel, C, is cast an inverted V-slot, E, to carry the nut and stud, F, from which, by means of a connecting rod, G, reciprocating motion is given to the slide, D. Cast on the end of the slide, D, and at right angles to it, is the horizontal cross slide, H, upon which the tool box moves in ordinary planing. The saddle of the cross slide, I, has on the front side a central stud upon which turns the worm-wheel, J, cast to which are the bevel side pieces, K, between which the front slide, L, and tool-box, M, are fixed. The table, N, is secured to the slide, B, by angular side pieces, and is raised or lowered by means of a screw and hand-wheel, O. On the table, N, may be fixed the parallel vice, P, as shown in our engraving. The vice is fastened to the table by V-headed bolts, which work in a corresponding groove turned in the vice bottom, so as to allow the jaws to be set at any angle. When the machine is to be used for shaping bosses, the casting carrying the cone mandrel, Q, Fig. 2, is fixed on the table, by bolts and steady pins. The table is moved until the top corresponds with the index on the angle of the vertical slide, B, the cone mandrel will then be perfectly central with the worm-wheel, J. The tool-box, M, is lifted and secured at right angles to the vertical slide, D, by a bolt through a projection, R, cast on the top of the tool-box. The strong wrought-iron toolholder, S, Fig. 2, is then fastened in the tool-box, and the machine is ready. In shaping external curves, the necessary motion to the tool is given by means of the worm and worm-wheel, J. For shaping internal curves, the work (either held in the vice or on the cone mandrel) must be lowered until the distance between the center of the worm-wheel and the work corresponds to the radius of the circle required.

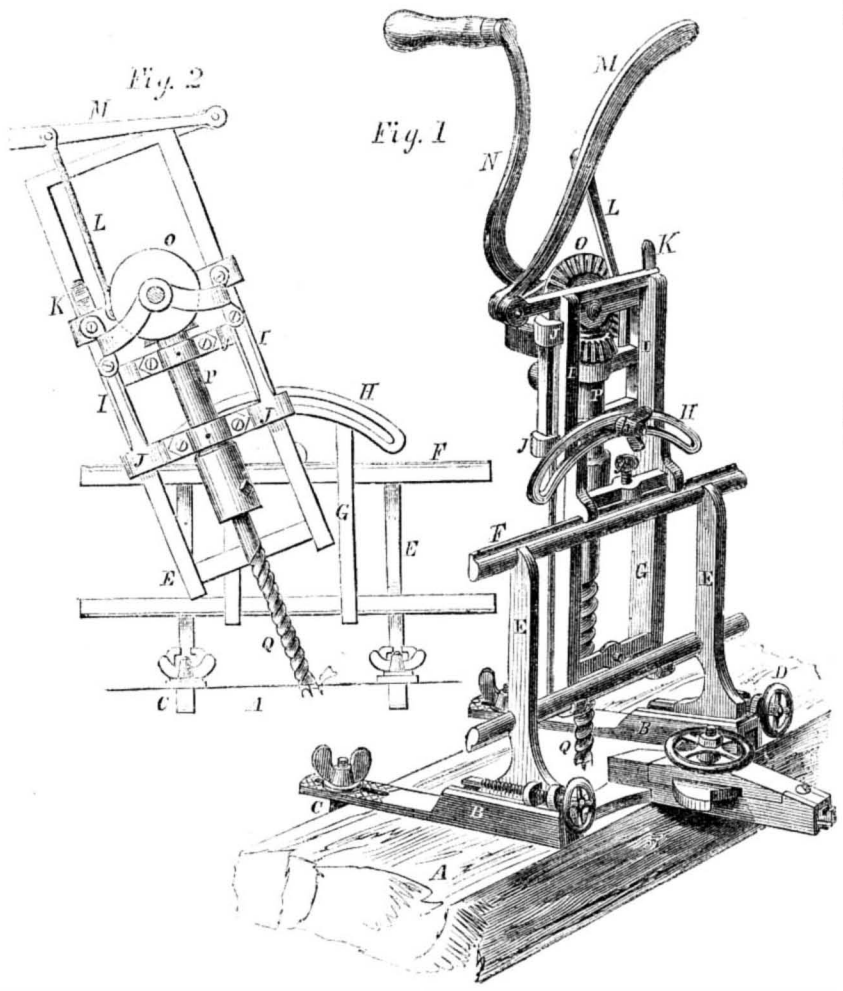
BARTON & SON'S SHAPING, PLANING AND SLOTTING MACHINE.



For slotting, the tool-box, M, is held as for shaping, when the slotting tool will be in a line with the working slide, D, as in an ordinary slotting machine. The work may be held either in the vice or on an angle plate bolted n the table, N.

Fixed on the side of the bed, A, is a bar of iron, T, carrying a movable slotted cam, U, into which, as the working slide, D, moves, runs a small roller, V, attached to the end of the bell-crank lever, W, axled on the end of the screw, X. On the short arm of the lever, W, is carried a double pall, Y, which gives motion to the screw, X, by means of the pinion, Z, keyed thereon. A similar motion is given the shaft, A′, which carries the worm, B′. The motion is reversed by throwing the pall to the contrary side of the pinion.

BOSENBURY'S BORING MACHINE.



The great number of mechanical tools which have, and are, daily taking the place of the rude hand tools used by our ancestors, is a demonstration of the progress of the age; and although many are but mechanical contrivances attached to the old tools, and still intended to be operated by hand, yet they have gained much in convenience, accuracy, and speed. One of these is the tool we are about to describe, invented by Jonas Bosenbury, of Cherryville, N. J., and patented by him April 14, 1857.

Fig. 1 is a perspective view of the tool, set so as to bore a hole perpendicularly. A is the stuff to be bored, grasped by clamps, C, and the movable rack operated by the wheel shown in the foreground. D are two fractional screws, which move the boring frame to any position on the stuff, and E is the frame, having ways, F, running at right angles to it. On these ways fits the piece, G, provided with a quadrant, H, in which the tool is held at any angle by the set screw, *b*. This piece, G, can be secured to any position on the ways, F, by set screw, *g*. I I are two uprights, having cross pieces, J J, provided with journals, in which the auger-holder, P, rotates, carrying the auger, Q. These journal pieces, J, can slide up and down I, and can be pressed down to keep the auger in the stuff, by the lever, M, and link, L; and when not required, or not in use, the tool is kept up by the spring catch, K. N is the handle which rotates the bevel wheel, O, and so gives motion to the auger. The advantages of this machine are, that it can bore at any angle, it can be easily and accurately adjusted to any position on the stuff, and by means of the lever, E, great power can be given the tool. Fig. 2 is a front view, with the handle or crank removed.

The inventor will furnish any further particulars, if addressed as above.

Machine for making Plated or Covered Cord.

The cord known as "plated cord," which is manufactured by this machine, is composed of strands of cotton, which have first a separate covering of silk or worsted wound upon each, and are afterwards laid together in the same way as the strands of ordinary rope. The process of covering the strands with silk or worsted is termed "plating" them. This invention consists in the employment of certain means of producing the strands, and covering them with silk or worsted at the same operation, and by the same motion, whereby the threads constituting the body of each strand and the threads of silk or worsted covering the same, are caused to have the same twist, and consequently the covering is not likely to become loose upon the body of the strands. There are also "regulators" for preventing too great a strain upon the twisted and plated strands before they are laid together to produce cord, and they thereby insure the softness of the cord. There is an arrangement of the strand-twisting and plating contrivances and the laying mechanism, by which the whole are combined so as to form a machine of compact and convenient form, in which the strand-twisting and plating and the laying operations are effected in a very perfect manner. It is the invention of Charles Feichert, of New York City, and was patented this week.

Grinding and Polishing Glass.

This is a valuable invention and improvement, for the purpose of grinding and polishing glass surfaces. The inventor is Alexander Lindsay, of Malone, N. Y., and it was patented this week in this country, patents having been previously obtained in England, France, and Belgium. It consists in a method of producing a combined rotary motion, either of the grinding and polishing surface or surfaces, or of the surface or surfaces being ground or polished, through the agency of friction; and a simple rotary motion that is imparted to the opposed surface or surfaces, whereby an almost infinite permutation is produced between the different points in either of the surfaces relatively to the opposed surface or surfaces, and hence the grinding or polishing is enabled to be performed with a high degree of perfection.

PATENT EXTENSION.—Mr. Edie, from the Committee on Patents in the House of Representatives, has reported a bill for the extension of the patent of Edwin M. Chaffee for an improvement in the manufacture of india-rubber. It is now before a committee of the whole House.

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Scientific American.

NEW YORK, MARCH 20, 1858.

The Patent Office and its Management.

Perhaps no other department of the government has been less subjected to the unfavorable criticism of the press and the public, since its organization, than the Patent Office; and we may assert with perfect confidence of its truth, that no other department has been better managed as a general thing, or more free from influences unfavorable to an honorable administration of its affairs. The utility of this institution is admitted by all. It was founded in a true appreciation of the value of genius to the development of the material and moral forces of our country; and but for its fostering protection, we should not now occupy the position we have assumed as a nation.

Since the re-organization of the Patent Office under the act of July 4, 1836, the duties of Commissioner have been discharged successively by H. L. Ellsworth, Edmund Burke, Silas H. Hodges, Thomas Ewbank, Charles Mason, and Joseph Holt, the present incumbent; all gentlemen above the suspicion of intentional wrong doing, yet not all equally felicitous in the management of the Office. We begin our brief review of the affairs of the Office at the time when Judge Mason assumed its duties, early in the administration of President Pierce. The department at that time had fallen into a somewhat confused condition, not from any intentional neglect on the part of the officials, but from a want of the executive ability to manage its complex details, which want had been confessedly shown by the preceding head of the Office. The Office had become unpopular with inventors; their claims were unreasonably delayed; and the whole tendency of its affairs was to an almost indescribable mass of confusion. One Examiner would kick like a bull in a China shop, rejecting nearly all the claims which were presented to him, and not hesitating in the least to reprimand either the applicant or his attorney, under the official seal, for presuming to argue against the fallacies of his decisions. Another Examiner would reject the case, and frame his own notions in regard to it; and the applicant might argue and plead in vain for a reversal of the decision, even although the invention might possess patentable novelty.

We recollect a case about the time we refer to—an improvement in a clock-pendulum. It was an excellent thing, and had so been proved by actual use. Upon an examination it was rejected; but not satisfied with the reasons given for its rejection, the attorney appeared before the Examiner on behalf of his client, and after a considerable conversation, the Examiner informed the attorney that he thought he could see just what was new in the invention; but immediately shut off this gleam of hope with the complacent announcement that "it was not his business to suggest features of novelty." It will force itself upon any one at all conversant with such matters, that the attorney might have *guessed* half a hundred times without hitting the precise idea which lurked away in the profound cranium of the Examiner. In cases like this, if the applicant was not satisfied with the unsound references cited to overthrow his claims, and persisted in arguing against them, the Office clapped its official action down upon him, with the agreeable announcement, that if not satisfied, an appeal could be taken to the District Court on payment of a fee of $25; and thus in many cases the inventor, for want of means to carry on his appeal, would be deprived of his just rights; but should he appeal, lo! and behold! here is this same Examiner in the Court ready to confront him, in the capacity of an attorney for the Patent Office who had before said he "could see novelty" in the honest man's case, but refused to lift a finger to point it out. When Judge Mason took the Office, he found it like "a nest of unclean birds;" and he set the power of his mind to the devising of plans for its purification. He carefully studied the law under which it was governed, and acquired a knowledge of its letter and spirit. As a disciplinarian he had the nerve to assert his authority, and after becoming familiar with all the details of the Office, he established a system and enforced obedience to it. Appeals could be taken from an Examiner's decision up to the Commissioner, who, with a patience worthy of the patriarchs of old, sifted the chaff from the wheat, and over-ruled many wrong-headed, unjust decisions. This course necessarily entailed upon him a vast amount of labor, (though he could perform more than most men,) so much, in fact, that he was compelled—previous to his leaving the Office—to call special assistance in deciding appeal cases. Judge Mason performed a herculean labor; but before his views were completely established he retired, respected and beloved by all; and yet, strange to say, Congress paid no sort of attention to his recommendations, and he left the Office under the same laws as existed at his entrance. Not a change was made, and not one of his views received favorable action from that authority which alone had the power to legislate upon them.

Without solicitation by, and against the wishes of the appointee, the Commissionership was tendered to Mr. Holt, who at first refused it; but upon the pressing urgency of the President he accepted the charge, and at once entered vigorously upon the performance of his duties. He also made himself acquainted with the law, and in his report to Congress, dated Jan. 20, 1858, he gave an expression of his views in relation to it. They are eminently worthy of his head and heart; and we say, without the slightest word of qualification, that no similar document—we make no exception—ever received such general commendation from inventors.

Commissioner Holt's policy is an advance in the right direction upon that which he found upon entering the Office. He has grasped the whole subject, and is earnestly working to establish the Office upon a sound and just basis. One of his first acts was to select from among his Chief Examiners an Appeal Board of three individuals, to whom cases could be carried from the decision of primary Examiners. He was fortunate in this selection, so far as the interests of inventors are concerned; but he was unfortunate in not being able to please every Examiner in the Patent Office. Some of them kicked against his judgment, but without avail; he would not recede. The growling and snarling continued, but suddenly the doors are opened, and some of the growlers are bid to seek repose outside of the spot wherein they were evidently so uncomfortable; and we say emphatically, that the Office is better for these changes, and we say further that it is clearly the duty of every employé in the Office to resign, unless they can lend their obedience to the rightful authority of the Office. The responsibility falls upon the Commissioner, and upon him alone; and in the name of common sense, we submit that the subordinate officers have no business to undertake to subvert his authority. Commissioner Holt is not the man to tamely submit to this species of dictation. He will listen to advice, he is glad to receive it, but it is unlike him to suffer his honest judgment of what is right, to be defied or trampled upon by those who should look to him for their proper action. This independent course of the Commissioner, while it is working admirably to the advantage of the Office, and to the entire satisfaction of those who have claims before it, has incited rebellion and provoked opposition, which has shown itself in the shape of a patent bill, published in the SCIENTIFIC AMERICAN, No. 25, and in certain dirty squibs which have appeared in one of the prominent daily papers of this city. They have been the offspring of malice; and of course, truth has been perverted to render them useful in serving the selfish ends of their propagators.

The Washington *Union*, under date of the 5th inst., condescends to notice these silly and malicious attacks, and by an appeal to the facts, derived from the records of the Patent Office, completely upsets them, and exposes their sophistry in a manner somewhat damaging to the assailants. They want very much to drive Commissioner Holt from the Office. He stands in their way, but it is not at all likely that he will please them in this matter.

Spontaneous Combustion and Fires.

When a substance takes fire in the atmosphere without being exposed to intense or high heat, the action is called "spontaneous combustion." Phosphorus is the only common substance which is subject, under *all ordinary circumstances*, to this action. The fuels (wood and coal) employed to produce artificial heat, require exposure to a high temperature before they will burn, hence they are not subject to spontaneous combustion; that is, they will not take fire of themselves under *ordinary circumstances*. Were it otherwise, there would be no safety for the "dwellings of men," and it would be impossible to conduct any kind of manufacturing operations requiring fuel.

Although these statements are positive facts, yet it is also true that disastrous fires sometimes do take place under such peculiar circumstances that no other theory of explanation as to their cause is left but that of "spontaneous combustion."

We have a letter now before us, received from F. Dunworth, of Dobbs' Ferry, N. Y., in which he relates two rather singular cases of this character, known personally to himself. One of these took place in the Britannia Metal Works of James Dixon, Birmingham, England, and the other in an establishment in the same place, where the manufacture of German silverware was carried on. In the first manufactory, rottenstone in fine powder, rubbed up between the hands with oil, was used for polishing the metal. A quantity of this, wrapped up in paper, was laid upon one of the iron beams in the shop by one of the workmen, just before quitting work in the evening. On his arrival next morning, he found it, to his surprise, in an incandescent state, glowing like molten brass—it had taken fire spontaneously. This circumstance threw light on the cause of a fire which had consumed a former factory of Mr. Dixon, and which had been considered the work of an unknown incendiary.

In the German silverware establishment, lime in fine powder mixed with oil, like the rottonstone, was employed for polishing. A quantity of this was left one evening on a bench, as it had often been left before, and no thought of danger entertained. Next morning, however, when the first workman arrived and opened the door of the shop, he was driven back, for a few minutes, by dense fumes rushing out; and when enabled to enter, his surprise was great to behold the prepared lime on fire, and luminous as molten metal in a crucible.

As neither rottenstone nor slacked lime are combustible substances, they certainly could not have taken fire of themselves in the foregoing cases. The cause of spontaneous combustion in both of these instances was the oil spread thinly over very extended surfaces when mixed with the powders. Various fires have taken place spontaneously, by oil being mixed with cotton waste in factories; but as cotton is very combustible in itself, not so much surprise is excited by such instances, in comparison with combustion produced in lime and rottenstone. Oil has a great affinity for the oxygen of the atmosphere when spread minutely over an extensive surface. During the action of absorbing the oxygen, considerable heat is generated, which, if not conducted away, owing to confinement in a somewhat warm place, is liable to become so concentrated as to produce intense, or "spontaneous combustion." The oil does not take fire spontaneously, like phosphorus; it is only *liable* to take fire spontaneously under certain circumstances, such as those related. On this very account, there is, perhaps, a greater necessity to be cautious and watchful in its use, as persons are apt to forget that it *may* take fire. Any substance in a finely subdivided state which contains oil should never be left in an insecure place. As charcoal dust rubbed with oil is sometimes employed to polish metal, it is as liable to spontaneous combustion as cotton waste. Great care should also be exercised in preparing charcoal dust for other purposes, not to allow oil to get amongst it, because of the danger stated.

Bituminous coals in the holds of ships are liable to spontaneous combustion under certain conditions, but not anthracite coal or coke. There is a great quantity of oil in rich bituminous coal, and this may be the *main* cause of the coals' liability to take fire spontaneously. This oil is distilled at a comparatively low temperature; and if there is iron pyrites in it, a little moisture finding access will unite with the sulphur, and generate sufficient heat to decompose the oil, which, as it is rather volatile, and has a great affinity for oxygen, may ultimately engender sufficient heat to produce intense combustion. This may be the process by which spontaneous combustion takes place with bituminous coal in the holds of ships; but be this explanation correct or not, a sure and accessible means of detecting incipient combustion in the holds of ships is much needed, because a few bucketsful of water, in the early stages of any fire, will prevent a conflagration.

The late case of the burning of the *Sarah Sands*—an iron steamer, well known in this city—by spontaneous combustion of coal while on a voyage to India with troops, has called forth a method of detecting such fires in an early stage, by Dr. Hay, the Admiralty Chemist, at Portsmouth, England. It consists of a small thin copper cylinder, like the air chamber of a water ram or force pump, capable of containing a quart of air, placed in the coal bunker, and connected with a small iron gas pipe, bent down like a syphon, then carried to any suitable place up into the cabin. This pipe is terminated with a glass tube attached to a graduated scale, which tube is filled to zero with a solution of soda and water tinted with litmus. The slightest rise of temperature in the air of the metal chamber in the coal bunker will show a material rise of the fluid in the tube of the indicator, and thus the officer on duty can at once detect when the temperature below is increased from any cause, and take prompt measures against danger. Such an apparatus is adapted for being placed in the holds of vessels carrying cotton, which sometimes take fire, and it should be applied to the store-rooms and holds of all ships, as a protective indicator.

Preparing Murexid Color.

A few weeks since—on page 181—we gave a description of murexid as employed in dyeing, and in the last number of *Newton's London Journal*, we find the description of an improvement, for which a patent has been obtained in England by Wm. Clark, relating to the preparation of this new coloring agent. The patentee states that it has been known heretofore that by treating alloxantine with carbonate of ammonia murexid was obtained. The improved process consists in taking alloxantine in a powdered state or in crystals, and submitting it to contact with ammonia in a gaseous state. A closed chamber or vessel is therefore necessary for conducting the operation, to bring the gas in contact with the alloxantine. Very pure murexid is also obtained by treating the alloxantine with liquid ammonia mixed with alcohol. The ammonia dissolves the alloxantine, and after this, by driving off the alcohol and ammonia by heat, the murexid obtained is very pure, and capable of being preserved a considerable time. Alloxantine is the product of uric acid dissolved in nitric acid and exposed to heat.

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A BILL

TO AMEND THE SEVERAL ACTS NOW IN FORCE IN RELATION TO THE PATENT OFFICE.

Section I provides that the Commissioner of Patents may establish rules for taking affidavits and depositions required in cases pending in the Patent Office; and such affidavits and depositions may be taken before the clerk of any court of record, or any officer authorized by law to take depositions to be used in the courts of the United States; and in any contested case pending in the Patent Office, it shall be lawful for the clerk of any court of the United States for any district or Territory, and he is hereby required, upon the application of any party to such contested case, or the agent or attorney of such party, to issue subpœnas for any witnesses residing or being within the said district or Territory, commanding such witnesses to appear and testify before any clerk of a court of record, or any officer as aforesaid, residing within the said district or Territory, at any time and place in the subpœna to be stated; and if any witness, after being duly served with such subpœna, shall refuse or neglect to appear, or, after appearing, shall refuse to testify, (not being privileged from giving testimony,) such refusal or neglect, being proved to the satisfaction of any judge of the court whose clerk shall have issued such subpœna, said judge may thereupon proceed to enforce obedience to the process, or to punish the disobedience in like manner as any court of the United States may do in case of disobedience to process of *subpœna ad testificandum* issued by such court; and witnesses in such cases shall be allowed the same compensation as is allowed to witnesses attending the courts of the United States: *Provided*, That no witness shall be required to attend at any place more than forty miles from the place where the subpœna shall be served upon him to give a deposition under this law: *Provided, also*, That no witness shall be deemed guilty of contempt for refusing to disclose any secret invention made or owned by him: *And, provided further*, That no witness shall be deemed guilty of contempt for disobeying any subpœna directed to him by virtue of this act, unless his fees for going to, returning from, and one day's attendance at the place of examination, shall be paid or tendered to him at the time of the service of the subpœna.

Section II provides that for the purpose of securing a greater uniformity of action in the grant and refusal of letters patent, there shall be appointed in the same manner as is now provided by law for the appointment of examiners, a board of three examiners-in-chief, to be composed of persons of competent legal knowledge and ability, whose duty it shall be, on the written petition of the applicant for that purpose being filed, to revise and determine upon the validity of decisions made by examiners when adverse to the grant of letters patent, and also to revise and determine in like manner upon the validity of the decisions of examiners in interference cases, and to perform such other duties as may be assigned to them by the Commissioner; and from the decisions of this board, appeals may be taken to the Commissioner of Patents in person, upon payment of the fee hereinafter prescribed; that the said examiners-in-chief shall be governed in their action by the rules to be prescribed by the Commissioner of Patents; that no appeal shall hereafter be allowed from the decision of the Commissioner of Patents, excepting in cases pending prior to the passage of this act.

Section III provides that no appeal shall be allowed to the examiners-in-chief from the decisions of the primary examiners, except in interference cases, until after the application shall have been twice rejected; and the second examination of the application by the primary examiner shall not be had until the applicant, in view of the references given on the first rejection, shall have renewed the oath of invention, as provided for in the seventh section of the act entitled "An act to promote the progress of the useful arts, and to repeal all acts, and parts of acts, heretofore made for that purpose," approved July 4, 1836.

Section IV provides that the salary of the Commissioner of Patents shall be four thousand dollars;

The salary of each examiner-in-chief shall be two thousand seven hundred and fifty dollars; and

The salary of the chief clerk of the Patent Office shall be two thousand dollars.

Section V provides that the Commissioner of Patents is authorized to restore to the respective applicants, or, when not removed by them, to otherwise dispose of such of the models belonging to rejected applications as he shall not think necessary to be preserved; the same authority is also given in relation to all models accompanying applications for designs; he is further authorized to dispense, in future, with models of designs, when the design can be sufficiently represented by a drawing.

Section VI provides that the tenth section of the act approved the 3d day of March, 1837, authorizing the appointment of agents for the transportation of models and specimens to the Patent Office, is hereby repealed. The Commissioner of Patents is hereby authorized to employ a clerk of the third class to frank such letters and documents as he is by law permitted to frank, and to perform such other duties as the Commissioner may assign to him.

Section VII provides that the Commissioner may require all papers filed in the Patent Office to be correctly, legibly, and clearly written, and for gross misconduct he may refuse to recognize any person as a patent agent, either generally, or in any particular case; but the reasons of the Commissioner for such refusal shall be duly recorded, and subject to the approval of the President of the United States.

Section VIII provides that no money paid as a fee on any application for a patent, after the passage of this act, shall be withdrawn or refunded; nor shall the fee paid on filing a caveat be considered as part of the sum required to be paid on filing a subsequent application for a patent for the same invention; that the three months' notice given to any caveator, in pursuance of the requirements of the twelfth section of the act of July fourth, eighteen hundred and thirty-six, shall be computed from the day on which such notice is deposited in the Post-office at Washington, with the regular time for the transmission of the same added thereto, which time shall be endorsed on the notice; and that so much of the thirteenth section of the act of Congress, approved July fourth, eighteen hundred and thirty-six, as authorizes the annexing to Letters Patent of the description and specification of additional improvements, is hereby repealed.

Section IX provides that so much of the laws now in force as fix the rates of the Patent Office fees, are hereby repealed, and in their stead, the following rates are established:—

On filing each caveat, ten dollars.

On filing each original application for a patent, except a design, twenty dollars.

And on the issuing of the patent, ten dollars in addition.

On every appeal from the examiners-in-chief to the Commissioner, twenty dollars.

On every application for a patent for a design, fifteen dollars.

On every application for the re-issue of a patent, thirty dollars.

On every application for the extension of a patent, fifty dollars.

On filing each disclaimer, ten dollars.

For all certified copies, fifteen cents per hundred words.

For recording every assignment or other writing, of three hundred words or under, one dollar.

For recording every assignment or other writing, over three hundred and under one thousand words, two dollars.

For recording every assignment or other writing, if over one thousand words, three dollars.

For copies of drawings, the reasonable expense of making the same.

Section X. provides that all applications for patents shall be completed and prepared for examination within two years after the filing of the petition, and in default thereof, they shall be regarded as abandoned by the parties thereto; and all applications for the extension of patents shall be filed at least ninety days before the expiration thereof; and notice of the day set for the hearing of the case shall be published, as now required by law, for at least sixty days.

Section XI provides that in all cases where an article is made or vended by any person under the protection of letters patent, it shall be the duty of such person to give sufficient notice to the public that said article is so patented, either by stamping thereon the word "patented," together with the day and year the patent was granted, or where, from the character of the article patented, that may be impracticable in the judgment of the Commissioner of Patents, by invoicing one or more of said articles and affixing a label to the package, or otherwise attaching thereto a label on which the notice, with the date, is printed; on failure of which, in any suit for the infringement of letters patent, by the parties failing so to label or stamp the article the right to which is infringed upon, no damages shall be recovered by the plaintiff, except on proof that the defendant was duly notified of the infringement and continued, after such notice, to make or vend the article patented; and that the sixth section of the act entitled "An act in addition to an act to promote the progress of the useful arts," &c., approved the twenty-ninth day of August, eighteen hundred and forty-two, be, and the same is hereby, repealed.

Section XII provides that all acts and parts of acts heretofore passed, which are inconsistent with the provisions of this act, be, and the same are hereby, repealed.

Morris's Corrections for Local Magnetic Attraction.

MESSRS. EDITORS—This is a subject of such vital importance to the safety of steamships, and to iron vessels whether sailing or steamships, that I call your attention to it in the hope of bringing Capt. Griffith Morris's plan for applying corrections into more extensive notice. I beg leave to ask your perusal of a small pamphlet published by me in the early part of the last year, wherein the subject of local attraction and magnetism is touched upon. It is there clearly seen how far the light of science has shone on the subject, and how far philosophers have been at fault in curing the disease called "local attraction." While Barlow, Airy, Gray, Scoresby, Harris, Walker, Faraday, and other scientific and practical men have studied the subject on shore, and have written much regarding it, not one of them has found an infallible remedy; few have studied it at sea on board of iron ships, and only one of the great names above given has, to my knowledge, made a voyage in an iron ship to the southern hemisphere, and he (Dr. Scoresby) reported on his return from Australia that the only safe remedy in iron ships was to elevate the compass above the reach of the magnetic current or local attraction, and I believe this is the practice on board of iron ships generally. The inconvenience of trusting to a compass elevated many feet above the deck can be readily estimated by navigators; it must be subject to great vibrations in steamers, especially in propellers, and in sailing ships to many accidents. The English nautical magazines are full of discussions on local attraction, a reference to which would fill a volume, but it may not be out of place to quote a few lines from a letter published in June, 1856, in the *Mercantile Marine Magazine*, from W. W. Rundell, Secretary of the Liverpool Compass Committee:

"But it will also be seen by any one who visits our shipping, that nine out of ten ships have long, and more or less massive horizontal iron spindles connected with the steering apparatus—in some cases at a higher and some at a lower level than the compass card; and I proceed to draw your attention to the action of such bars upon the compass. Now, these bars, and in fact, the fore and aft horizontal portion of all the iron in the ship, produce an effect which has been aptly termed 'quadrantal,' (for the reason that it changes its character in each quadrant of the compass,) and produces easterly deviation when the ship's head is between N. and E.; westerly deviation when between E. and S.; easterly deviation again when the ship's head is between S. and W., and again westerly in the remaining quadrant. It is worthy of remark, that this deviation is independent of locality, and has the same effect at the equator as at the pole.

"As before, I will not attempt to estimate the amount of this kind of error, but only direct your attention to the fact, that in two quadrants of the compass it will tend to decrease, and in the other two to aggravate, those deviations which arise from iron situated aft and below the compass.

"There is another cause of error which must be mentioned here, though it does not affect so large a number of ships as the preceding—I allude to the double binnacle. In many cases where these are used, the compasses are placed so close as to disturb each other, and the result is, a quadrantal error of precisely the opposite kind to that arising from fore and aft iron; but, like it, alternately increasing and decreasing the errors due to that cause of deviation which was first discussed.

"These remarks convey but a very imperfect idea of the compass question; they should be taken in the restricted sense in which they are given, and as illustrating the possible accumulation of small errors; but I would protest against their being received as merely theoretical, for they are the result of ample and practical experience. My desire is to briefly state as much as may enable any one who will give the subject a little attention to understand the nature of the deviations likely to arise from the iron fittings about the rudder and steering apparatus, on board wooden ships. When deviations occur in our merchant ships, which do not arise from iron cargo, the cause is almost invariably found in this direction, and the errors are consequently of the opposite kind to those observed in men-of-war. [This should be borne in mind by persons reading different works which have been published on compass deviations, in which the observations have been mostly derived from officers of the royal navy.]"

In the July number of the same magazine may be found a "summary of results" derived from G. B. Airey Esq., Astronomer Royal, among which he says: "On reviewing the results of the preceding examinations, I think I am justified in denouncing any system of navigating a ship by forming a table of compass deviations at the starting port, and using that table until means of correction can be obtained from observations, as dangerous, and I think it ought to be discontinued;" and again he says, "I apprehend that the necessity of using a table at all (that is, of steering by one nominal course when another course is intended) is, especially in difficult channels a very serious evil from which the method of steering by a corrected compass is entirely free." There seems to be no doubt whatever that several expedients are resorted to in England and elsewhere, on that side of the Atlantic, by which compass errors are obviated on certain courses; a table of variable errors being made for the other points, and that by constant watching, by azimuths, and other means, ships go and come safely. But no settled plan exists by which local attraction, in all places, North or South, is entirely neutralized, excepting the plan of Capt. Morris. If he can do this he has certainly attained what much more learned men have failed to do. The question then is, how far have we the proof that Capt. Morris has attained this most important object? In this locality, we know that he has navigated an iron tow-boat for twelve or thirteen years, most of the time by virtue of corrections applied by himself, and which he says were permanent until he put in new boilers last summer, when he re-adjusted his compasses.

Next in importance comes the iron schooner *Mahlon Betts*, corrected nearly three years ago for a very large error making her compasses quite valueless. This vessel has been to the West Indies, and Capt. Godfrey reports, on several occasions, that his compasses are *correct on all courses.*

The steamers *Palmetto*, Capt. O. Baker; *S. A. Stevens*, Capt. Stow; *J. Whitney*, Capt. S. Howes; *Henry Morison*, Capt. Loring; *Wm. Jenkins*, Capt. Hallet; *Nantasket*, Capt. Rouel, and others, who have tested Capt. Morris's method on our coast and in the Delaware and Chesapeake, have perfect confidence in their compasses.

In my own experience I have tested his corrections in an iron yacht, the *Edith*, during one summer's cruising. I gave him but a few hours to do the work, and he considered it imperfectly done, but I found my compasses as correct as the most fastidious navigator could desire. I have also applied the corrections to the iron steamer *Argentina*, now bound to the La Plata; on several trial trips her compasses were found quite correct, although, like the *Edith's*, they were very much out on E. and W. courses before the application of the corrections.

It will thus be generally conceded that Capt. Morris understands correcting compasses in this latitude in wooden and iron steamers and iron sailing vessels, in one case as far south as Trinidad. R. B. FORBES.

[TO BE CONCLUDED IN OUR NEXT.]

SEED-SOWER.—A correspondent writes us that as yet he has heard of no "light broadcast sower," constructed so as to be readily adapted to all kinds of grain and grass seed, where the operator can ride in a comfortable arm-chair.

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Correspondents

P. C. M., of Ill.—Your remittance of $4 is at hand. We will return your model and patent as soon as we can spare it. We know nothing about the parties of whom you inquire or their books.

C. B. Thompson, of St. Catharines, C. W., desires to correspond with some party who manufactures the *best* boot-crimping machine.

J. R. L., of Fla.—There is nothing new or patentable in the employment of saws for the purpose of trimming the edge of the board in the operation of tongueing and grooving.

L..H. Thomas, of North Adams, Mass., wishes to procure a machine for crimping zinc. Can some of our readers inform him?

B. M. & Co., of London.—Your letter of the 19th came to hand after your advertisement had expired, therefore too late to make the alteration in it which you propose.

D. A. M., of Pa.—You will find an engraving of a grist mill feeder on page 344, Vol. 12, Sci. Am., which we recommend you to employ in preference to the old plan.

M. L. P., of Ill.,—You can procure pump augers of the Ames Manufacturing Company, Chicopee, Mass.

G. F. W., of Ohio.—Who are you? If you wish attention repeat your inquiries, and let us know who you are.

C. S. F., of Me.—You can obtain the book from Scribners', Park row, this city. The price is $2 50.

C. C., of Me.—You can procure a "Rose engine for ornamental turning" from J. Reece & Son, Haydenville, Mass. We do not keep machinery of this kind for sale. You will find in our advertising columns several reliable machinery manufacturers and dealers.

J. M. B., of Pa.—The difficulty under which you labor at present is that the Commissioner of Patent's report is not yet published, and will not appear in all probability until near the close of this year. In No. 22 of the present volume Sci. Am., we published the report in advance of its regular issue by authority of Congress. You will undoubtedly get it after its issue. Congressional printing jobs are very slow coaches for this fast age. They are about the only reminders we have of old times.

H. J. K., of Mass.—A patent was granted to Thomas J. Spear, of New Orleans, La., July 16, 1841, for the following method of making indelible ink. Take three drams of ground India ink, and four ounces of boiling solution of caustic soda, mix these ingredients together, shake them for about ten minutes, and the ink is ready for use. You can try this ink, perhaps it may suit your purpose. Any person has the privilege of using it now.

H. Z., of N. Y.—You ask, "How many engines can exhaust into the same condenser and keep the vacuum at twenty inches, with one air pump?" A dozen steam engines may exhaust into one condenser, and the vacuum may be maintained with one air pump, provided the pump and condenser are large enough. The capacity of the condenser and pump must be proportioned to the quantity of steam to be condensed, not the number of engines.

N. S., of Wis.—The cheapest and best floating bridge which you can build for winter over a portion of the Mississippi is by logs with their ends put up and down the stream, well fastened together and planked on the top for the roadway. Connect the ends at each side to strong chains to allow for the rising and falling of the water.

J. E. B., of ——.It is not a new idea to generate steam in a boiler by injecting the feed water into the boiler or generator in fine spray. If Mr. Paine's proposed invention only embraces this feature, it is neither new nor useful.

C. R. T., of Mich.—Switches have been arranged so that while the cars are passing, they adjust it, to prevent them from running off the track. The sketch you send does not show how the operation is performed, therefore we can only arrive at a general conclusion, which is unfavorable to its novelty.

M. B., of S. C.—Your ideas are good, but we could not carry them into practice without much trouble.

L. M. M., of N. Y.—A "horse power" means 33,000 pounds, lifted one foot high in one minute. The pressure in a boiler does not indicate the horse power. Violins are stained dark or light, according to the kind of varnish employed. "Dragon's blood" is the principal coloring agent for violin varnishes. You can make them light or dark, according to the quantity used.

Z. D., of Ga.—On page 120, Vol. 5, Sci. Am., you will find an article on preparing hides for tanning, in which the best methods known to us are described. by a very experienced tanner.

A. T. H., of D. C.—Our former answer regarding the impossibility of obtaining an increase of power by simply increasing the diameter of a water wheel, is also applicable to the revolving endless belt bucket motor, which is quite old.

J. C., of Ohio.—We have cautioned the public about being too sanguine regarding the sugar crop to be obtained from the Chinese cane, and anything more upon the subject in our columns than has already appeared, would be a waste of space. Your information regarding glucose is interesting and useful.

J. D., Jr., of Va.—You will find a full description of the new alloy resembling gold, on page 308, Vol. 12, Sci. Am. We do not know why white zinc paint spreads so much when mixed with oil. A good *drier* should be used with it.

M. T., of Iowa.—Weare not acquainted with a single work which describes the process of making Bourbon whiskey, nor is there a book published on the distillation of American whiskeys.

S. H. B., of Ohio.—We cannot describe the hot air engine, as it now is, without drawings, so as to convey a proper idea of its construction and operation. We shall present an engraving of it in a few weeks.

S. B. C., of Conn.—Umber, either burned or raw, mixed with white lead, makes the most beautiful buff color for the outside of houses. You can darken to any shade with ivory black.

J. S., of Ohio.—The cartridge of the Prussian needle gun is not made of the most sensitive percussion material "within our knowledge." It is simply percussion powder—the chlorate of potash—which you can obtain in abundance in the city where you reside.

J. R. B., of N. Y., can get the information he wants in regard to old coins by addressing Wm. Traver, of Camden, S. C.

J. S. D., of N. H.—Steel tools are tempered very hard by quenching them in cold salt brine when at a red heat. If you wish to render the tools somewhat tough and elastic, temper them in oil. There is no necessity for employing any other ingredient in the oil.

R. S., of Pa.—We do not know anything about the machine said to be patented, which cuts out fly-net strips of leather, combined with a pinking-iron. See recipes for gold wash in another column.

Money received at the Scientific American Office on account of Patent Office business, for the week ending Saturday, March 13, 1858:—

D. & M., of Pa., $30; W. M. B., of Del., $25; W. Y. G., of Ky., $25; L. R., of Mass., $40; D. M. L., of Pa., $30; W. I., of N. Y., $25; P. S., of Va., $25; J. W. C., of N. Y., $30; J. H. W., of N. Y., $20; L. W. H., of N. Y., $55; N. A., of Pa., $30; H. & B., of N. Y., $55; A. M., of N. Y., $25; H. M., of N. Y., $105; J. H., of Mo., $55; H. B., of Pa., $25; S. & A., of Mich., $30; G. M. L. McM., of Ohio, $35; W. W., of N. Y., $25; W. D., of Wis., $25; W. W. H., of Ohio, $12: J. B., of Conn., $30; W. D. J., of N. Y., $30; T. K. W., of Conn., $30; T. & McC., of N. Y., $32; C. & B., of N. Y., $20; J. McC., of Ohio, $10; F. & J., of Ohio, $30; T. F., of N. Y., $30; A. D. B., of Mass., $30; B. J., of N. Y., $30; J. W. G., of Vt., $25; W. M., of Ill., $30; D. O. De W., of N. Y., $25; M. T., of Conn., $22; S. W., of N. J., $30; N. F. E., of Vt., $30; W. & D., of Mass., $30; T. O., of Miss., $10; W. O. P., of N. Y., $20; J. S. D., of N. Y., $20; H. S. V., of N. Y., $35.

Specifications and drawings belonging to parties with the following initials have been forwarded to the Patent Office during the week ending Saturday, March 13, 1858:—

W. V. Jr., of N. Y.; H. B., of Pa.; W. M. B., of Del.; P. S., of Va.; J. B., of N. Y.; R. B., of N. Y.; E. K., of Pa; W. Y. G., of Ky; H. M., of N. Y., (3 cases); J. H., of Mo.; D. O. De W., of N. Y.; O. P. S., of Me.; W. W. H., of Ohio; J. V. A., of N. Y.; W. D., of Wis.; A. M., of N. Y.; M. T., of Conn.; T. & McC., of N. Y.; L. W. H., of N. Y.; J. S. D., of N. Y.; H. S. V., of N. Y.; O. S., of N. Y.

Literary Notices.

Blackwood's Edinburgh Magazine.—This able periodical for the present month (as republished) contains the "Journal of Capt. Burton," author of the "Pilgrimage to Mecca," and sent from Zanzibar, in East Africa, where he is now travelling. It is a most interesting article. "What will he do with it?" is continued, and is a fascinating story. Published by Leonard Scott & Co., No, 54 Gold street, this city.

The Atlantic Monthly, for March, published by Phillips, Sampson & Co., of Boston, is sustaining its already high character for literary merit, and there is an amusing sketch in it entitled, "A Welsh Musical Festival."

The Young Men's Magazine for March is full of the most interesting and edifying matter. Its well-wishers are doing their utmost to extend its sphere of usefulness, and we hope that those of our readers to whom it is addressed will take a look at one number, when we are sure they will be pleased with it. Published at 343 Broadway, this city.

TO OUR SUBSCRIBERS.

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Consultation may be had with the firm, between nine and four o'clock, daily, at their principal office, 128 Fulton street, New York. We have lately established a Branch Agency on the corner of F. and Seventh streets, Washington (opposite the United States Patent Office). This office is under the general superintendence of one of the firm, and is in daily communication with the Principal Office in New York, and personal attention will be given at the Patent Office to all such cases as may require it.

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The annexed letter from the late Commissioner of Patents we commend to the perusal of all persons interested in obtaining patents:—

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Yours, very truly, CHAS. MASON.

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W. S. CLARK having withdrawn from the above partnership on the 21st of January, 1858, is prepared to give his personal attention to the procuration of foreign patents wherever protected or procurable, as well as the negotiation of sales of the same. For terms, apply to MUNN & CO., 128 Fulton st., New York.

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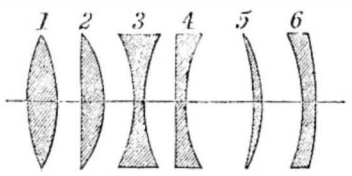
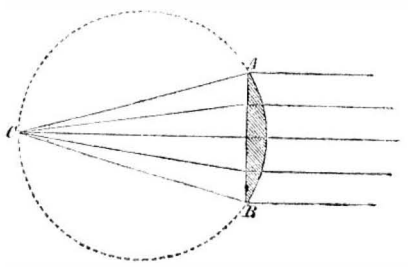
We promised to say something about lenses and their uses, and we now proceed to fulfil our promise. A lens is a medium of any transparent substance so shaped that the rays of light passing through it are either collected or dispersed.

The name, lens, is taken from the Latin word for a small flat bean, which the burning glasses of the ancients, to which the term was first applied, somewhat resembles. Each beam of light has what is called its axis, and this is the middle ray, and a right line passing through the center of a lens, where the rays are not at all affected, is its axis. The point at which the rays of the sun or other light are collected by passing through a lens, is called the focus of the lens, and when rays of light fall upon a lens, they are said to do so



either directly or obliquely. No. 1 is a double convex lens, or two convex surfaces on the one glass; No. 2 is a plano-convex lens, having one side flat and the other curved outwards; those magnify by increasing the angle of vision. No. 3 is a double concave lens, having two surfaces curved inwards; No. 4 is a plano-concave, having a plane surface and one curved inward; these concave glasses diminish objects seen through them by collecting instead of dispersing the rays and diminishing the angle of vision. No. 5 is a meniscus lens, having one of its sides concave and the other side convex, gradually nearing each other, until they meet at the edge. No. 6 is a concavo-convex, having surfaces like a meniscus, only that the curves recede from each other, instead of nearing, as in the former. What the focus of



a lens is, the engraving will illustrate. Suppose A B to be a plano-convex lens, of course the distance of the focus depends upon the convexity, but it may always be calculated, because if the circle of which the curve A B forms a part were continued, it would be at C, or exactly at the opposite side of the circle on the axis of the lens. In the double convex lens, the focus is nearly in the center of the circle, because they are bent to double the angle which they would be by a simple plano-convex. Many wonders are related of the burning glass, which is a double convex lens; thus it is said that Archimedes burnt the Roman fleet, in the harbor of Syracuse, by means of glasses and mirrors, and there is little doubt that they were extensively used by the Egyptian and Hindoo priests, for lighting fires miraculously and performing "miracles" generally. The largest burning glass is now at Pekin, where it was left by an English officer; it is three feet in diameter, and is three and a half inches thick through its center, and weighs 212 pounds; ten grains of common slate were fused by it in two seconds, and ten grains of cast iron in three. Many great men have amused themselves with these philosophical toys, among whom we may mention Napier, the inventor of logarithms, and Newton, the demonstrator of gravity.

A Good Whitewash.

As this is the season of the year when people begin to clean up and make things look fresh for the approaching summer, we have frequent requests respecting the best and cheapest whitewashes, both for the outside and inside of houses. As we have in former volumes given reliable recipes of this character, we have no occasion to refer our constant readers to them; our new subscribers, however, cannot avail themselves of the same reference—the following, therefore, is for them:

Take half a bushel of fresh-burned white lime, and slack it either with hot or cold water, in a tub or barrel. When thoroughly slacked, dissolve in the water required to thin the lime, two quarts of common salt, stir it thoroughly, add one quart of sweet milk, and it is ready for use to put on with a brush.

This wash is for the outside of buildings, fences, &c., and is very durable. Some put glue in whitewash, and others flour and rice paste; but these render it liable to scale off in very dry weather.

The above wash may be made a cream color by the addition of ochre.

The above whitewash is all that can be desired for the interior of houses, excepting the salt, it must be omitted, as it tends to imbibe moisture. French white is superior to lime washes for the ceilings of rooms, as it is not so liable to turn yellowish in color, but it rubs off so easily that it cannot be used for side walls.

Curing the Backlash in Flouring Mills.

We have received a letter from a correspondent in Dundee, N. Y., in reference to the article on the above subject, which appeared in our issue of the 13th of last month (page 179). In that article it was stated that the fly-wheel of a grist mill ought to be made "sufficiently large and heavy, so that its momentum shall exceed that of all the stones combined," and if so made, backlash would be prevented. Our present correspondent states that he has built twenty steam flouring mills within the last twelve years, and in no one instance has he witnessed a steady motion produced from a single engine where the periphery of the fly-wheel did not exceed in momentum that of the stones, by one-fifth; and he is now building mills with fly-wheels, the momentum of which exceeds that of the stones in the ratio of seven to four, and he finds that this is not too much to make the motion regular. He agrees with our former correspondent that short-stroke, quick-running steam engines are the best for grinding grain; and those which he now puts up, make from 140 to 150 revolutions per minute, and they do much better than slow-running engines.

Remarkable Works of Human Labor.

Nineveh was 14 miles long, 8 wide, and 40 miles round, with a wall 100 feet high and thick enough for three chariots abreast. Babylon was 56 miles within the walls, which were 75 feet thick, and 100 high, with 100 brazen gates. The temple of Diana, at Ephesus, was 420 feet to the support of the roof. It was a hundred years in building. The largest of the pyramids is 481 feet high, and 653 on the sides; its base covers 11 acres. The stones are about 60 feet in length, and the layers are 208. It employed 330,000 men in building. The labyrinth in Egypt contains 300 chambers and 12 halls. Thebes, in Egypt, presents ruins 27 miles around, and 100 gates. Carthage was 29 miles round. Athens was 25 miles round, and contained 359,000 citizens and 400 slaves. The temple of Delphos was so rich in donations that it was plundered of $50,000,000, and Nero carried away from it 200 statues. The walls of Rome were 13 miles round.

Grinding Mills.

Thomas Blanchard, of Boston, Mass., has invented and patented a new mill for grinding grain and other substances, and he has assigned it to E. Richmond, No. 8 Water street, Boston, Mass. The claim will be found on referring to another column.

Creamer's Match Safe.

The numerous accidents which occur from the indiscriminate use of matches, and the slight nature of the boxes in which they are usually kept, has induced J. B. Creamer, of New York, to invent a metallic match safe which will deliver only one at a time, and thus in some measure act as a preventive to fires. It was patented January 12, 1858.

By referring to the accompanying engravings, of which Fig. 1 is a perspective view, showing that it is ornamental as well as useful, and Fig. 2 is a section, it will be thoroughly understood. It is made in two parts, A being one, which is a box having an inclined platform, *a*, on to which the matches drop and roll out of the safe when released one at a time from it by the cylinder, E, whose handle is seen in Fig. 1. This cylinder has

Fig. 1.

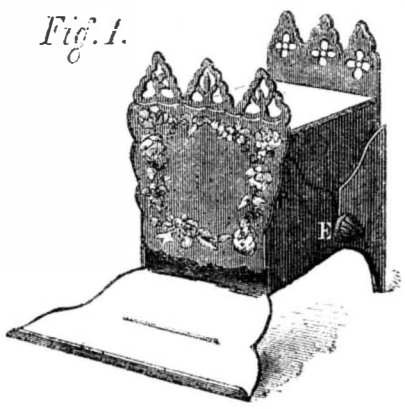
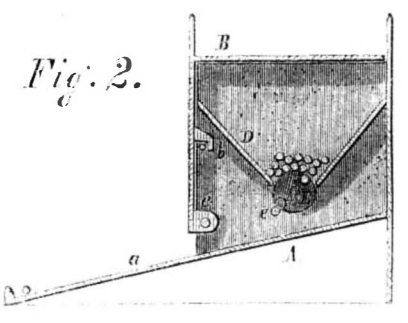


Fig. 2.



in it two grooves, *e*, each of which will contain one match, and as they are contained between the inclined plates, D, each half revolution of E carries one match from the safe to the inclined platform, *a*, from which they can be taken off. The front and top are cast together, as seen at B, and they are hinged to A at *c*; they are also provided with a catch, *b*, that holds them securely in their proper place to close the safe. When there are no matches in D a little lever (seen in Fig. 1) is depressed, and *b* is released. B is then folded back, and the safe is closed. When a match is required, the handle, E, Fig. 1, is turned half round, and one drops out. It is, as its name implies, safe, and cannot fail to be far preferable to the dangerous and clumsy boxes now in use, although the round matches only can be used in it.

Further information may be obtained from Messrs. Humphrey & Creamer, 37 Lispenard street, New York.

Friction Match Machine.

This invention relates to certain improvements in a machine for manufacturing friction matches, for which Letters Patent bearing date April 4, 1854, were granted to Wm. Gates, Jr., and H. J. Harwood. The improvement consists in the employment of cams, so arranged and formed as to perform the office of feeders, to move an endless chain or clamp used in the machine patented by the above, of wedges to open these clamps to receive the match sticks, and to allow the sticks to be discharged therefrom. Stops are also employed to retain or hold stationary the chain of clamps, while the sticks are being received by, or discharged from, them. There is also a device for guiding the match sticks into the clamps, and for holding the bolt in proper place on its bed. It is the invention of S. Miller. of Hammond, N. Y., and William Gates, Jr., of Frankfort, N. Y., and it was patented this week.

Anecdote of a Fish.

Messrs. Editors—Allow me to place on record in your valuable journal an instance of remarkable tenacity of life in a fish called the "killey," common in the brooks in our vicinity. A few mornings ago, as I was examining my aquarium, I discovered a fish that appeared afflicted with a disease that has killed a number; it presents the appearance of a white fuzz, commencing in a small spot upon the fins, tail, or back, and gradually, in the course of a few days, enveloping the whole fish, producing death. To prevent it spreading to others, (as it appears to be contagious,) I have adopted the plan of removing any upon the first indication of this disease. I took the fish from the aquarium and threw him in a stove where there was no fire, but it was partially filled with ashes, supposing that a few moments would end his misery. On coming into the room an hour and a-half afterwards, my wife remarked, "Why did you put a live fish in the stove? He is jumping about in the ashes." Sure enough, on opening the door, there was the fish alive, and so completely coated with ashes, I could not tell head from tail. I took him out, wiped the ashes off, and placed him back in the aquarium, determined, as he had shown such a tenacity for life, to let him live as long as he could. When placed in the water, he gradually and completely revived, and is now swimming as merrily as any of his companions. If this *is* a fish story, it is nevertheless strictly true.

G. F. J. Colburn.

Newark, N. J., March, 1858.

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